

Simpler Schemas: How to customize the LIXI Schema

John Matthews
LIXI

Why Customise?

- The LIXI standard contain 700 elements and 3000+ attributes
- The standard is very comprehensive
- It covers various transactions that occur along the lending chain
- It covers many types of credit products, types of borrowers, etc.
- A huge number of scenarios are covered by the standards
- But, no single use case will every require all the schema items

Overview of Customisation by Restriction

- Create a customised version of a LIXI schema
- Only include the items you use
- Restrict data that each item can accept
- Generate custom HTML schema documentation
- Accessible via a LIXI API

Customisation: using the LIXI API

Customise

POST /customise/{transaction} customise the schema according to a set of customisation instructions

[Cancel](#)

Name	Description
x-api-key * required string (header)	The API key associated with this project
<input type="text" value="x-api-key - The API key associated with this p"/>	
transaction * required string (path)	The LIXI transaction code indicating which LIXI transaction standard will be used for this customisation.
<input type="text" value="CAL"/>	
document string (query)	If this flag is set to "true" then customised schema documentation will be generated and returned along with the customised schema as a .zip file.
<input type="text" value="true"/>	
body * required string (body)	The LIXI customisation instructions
<input type="text" value="Edit Value Model"/>	
<pre><Customisations LIXIcode="FORUM" CustomisationCode="DEMO" customHeading="LIXI Forum 2019"> <CustomiseItem> <Path>Package.Publisher</Path> <CustomDocumentation>LIXI Forum 2019</CustomDocumentation> </CustomiseItem> </Customisations></pre>	

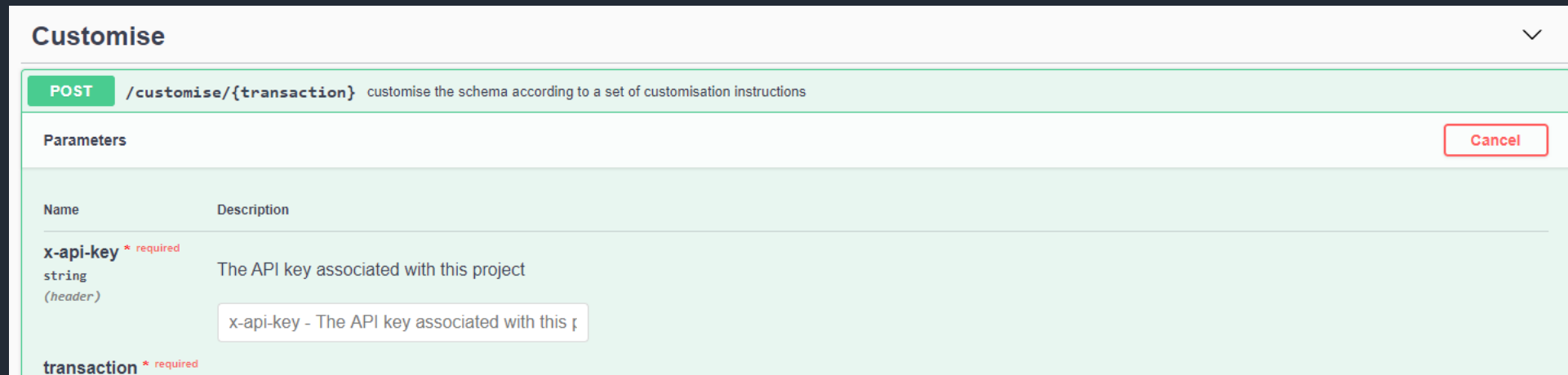
Accessing the LIXI API Demo

LIXI Open API Specification available here:

<https://lix-public.s3.ap-southeast-2.amazonaws.com/LIXI.json>

View using the Swagger UI: <https://petstore.swagger.io>

Contact me for an API key: john.matthews@lix.org.au



The screenshot shows a 'Customise' dialog box for a POST endpoint. The endpoint is `/customise/{transaction}` with the description 'customise the schema according to a set of customisation instructions'. The dialog is divided into a 'Parameters' section and a 'Body' section. The 'Parameters' section contains a table with two columns: 'Name' and 'Description'. The first parameter is 'x-api-key', which is a required string header. Its description is 'The API key associated with this project'. Below the table, there is a search box containing the text 'x-api-key - The API key associated with this p'. The 'Body' section contains a parameter 'transaction', which is a required string. A 'Cancel' button is located in the top right corner of the dialog.

Customise

POST `/customise/{transaction}` customise the schema according to a set of customisation instructions

Parameters Cancel

Name	Description
x-api-key * required string (header)	The API key associated with this project

x-api-key - The API key associated with this p

transaction * required

Customisation: Instructions

```
<Customisations  
  LIXICode="FORUM"  
  CustomisationCode="DEMO"  
  customHeading="LIXI Forum 2019">  
.  
.  
.  
</Customisations>
```

Features of our Customisation Methodology

1. Exclude from the Schema
2. Customise Documentation
3. Custom Attributes: Optional to Mandatory
4. Custom Attributes: String to List
5. Custom Attributes: String to Pattern
6. Min and Max Occurrences
7. Include in the Schema

Customisation : Exclude from Schema

```
<!-- Example 1: Exclude from Schema -->
```

```
<CustomiseItem Blacklist="Yes">  
  <Path>Package.Attachment</Path>  
</CustomiseItem>
```



Customisation : Exclude from Schema

The 'Attachment' element is no longer a child element of the 'Package' root element



Package (root element)

The root element that contains a message for exchange between two end points involved in the workflow related to the processing of an [application](#) for a new [financial product](#) or change management of an existing financial product. The message contains instructions to the recipient requesting some workflow activity along with data related to: the [applicant](#) and the [financial product](#) involved; the publisher; one or more recipients; [schema version](#) information; and any related attachments.

Path: Package 
Label: Package
This element is at the root level of the schema.

Contents of Element

Type	Item	Definition
element	Content ⓘ	Wrapper element for the actual data, the payload of the message
element	Instructions ⓘ	Determines the scope of the message. The message can be about the Application, Valuation, Mortgage Insurance, Loan Documents or an Error.
element	Publisher ⓘ	The publisher of the specific XML file, being the party responsible for the content of the file as well as the work instruction, and to whom the response message would be delivered. For a mortgage broker sending an application to a lender, this would likely be the aggregator if they are providing the software, or perhaps the broker company or broker otherwise. For a lender requesting LMI, the lender is the publisher. For the LMI response, the LMI provider is the publisher.
element	Recipient ⓘ	The intended recipients (company or company-specified routing) for the Package from the Publisher.
element	SchemaVersion ⓘ	Contains information about the package schema version
element	TransformMetadata ⓘ	Wrapper element for storing metadata required for enabling round trip transforms from a different data model into a message conforming to this schema and back again without loss of fidelity. Note that no data that carries meaning in this LIXI 2.x schema may be carried in this element.
attribute	ProductionData ⓘ	Indicates whether this file contains production or test data.
attribute	UniqueID ⓘ	System assigned unique identifier

Customisation : Custom Documentation

```
<!-- Example 2: Customised Documentation -->
```

```
<CustomiseItem>
```


```
  <Path>Package.Publisher</Path>
```

```
  <CustomDocumentation>LIXI Forum 2019</CustomDocumentation>
```

```
</CustomiseItem>
```


Customisation : Custom Documentation

The custom
documentation
has been added to
the schema and
documentation



Publisher (element in Package)

The publisher of the specific XML file, being the [party](#) responsible for the content of the file as well as the work instruction, and to whom the response message would be delivered. For a [mortgage broker](#) sending an [application](#) to a lender, this would likely be the aggregator if they are providing the software, or perhaps the broker [company](#) or broker otherwise. For a [lender](#) requesting LMI, the [lender](#) is the publisher. For the LMI response, the LMI provider is the publisher.

Path: Package.Publisher 
minOccurs="1" maxOccurs="1"
Label: Publisher
A direct descendant of: [Package](#)

LIXI Forum 2019

LIXI Forum 2019

Contents of Element

Type	Item	Definition
element	PhoneNumber ⓘ	A phone number for the publisher
element	RelatedSoftware ⓘ	Details of software that takes part in the creation of this message instance but is not the main software that is regarded as the message publisher.
element	Software ⓘ	Wrapper element for the publisher software details
attribute	CompanyName ⓘ	The company name of the publisher
attribute	ContactName ⓘ	Contact person from the publisher
attribute	Email ⓘ	An email address of the publisher contact person
attribute	LIXICode ⓘ	The LIXI-specified code of the sender/publisher of the Package.
attribute	PublishedDateTime ⓘ	The date and time that the XML file was generated.

Customisation : Optional to Mandatory

```
<!-- Example 3: Optional to Mandatory -->
```

```
<CustomiseItem OptionalToMandatory="Yes">
```

```
  <Path>Package.Publisher.CompanyName</Path>
```

```
  <CustomDocumentation>Mandatory Attribute.</CustomDocumentation>
```

```
</CustomiseItem>
```

Customisation : Optional to Mandatory

'CompanyName'
attribute is now
set to 'required'
and
our customised
documentation is
included



CompanyName (attribute in Publisher)

The [company name](#) of the publisher

Path: [Package.Publisher.CompanyName](#)

Label: Company Name

Use: required

A direct descendant of: [Package.Publisher](#)

This element uses the type: [stringType](#)

LIXI Forum 2019

Mandatory Attribute.

Schema Excerpt and Message Example

XML JSON

XML Schema Excerpt:

```
<xs:element name="Publisher" minOccurs="1" maxOccurs="1">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="PhoneNumber" type="phoneType" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="RelatedSoftware" minOccurs="0" maxOccurs="unbounded">... </xs:element>
      <xs:element name="Software" minOccurs="0" maxOccurs="1">... </xs:element>
    </xs:sequence>
    <xs:attribute name="CompanyName" type="stringType" use="required"/>
    <xs:attribute name="ContactName" type="stringType" use="optional"/>
    <xs:attribute name="Email" type="emailPattern" use="optional"/>
    <xs:attribute name="LIXIcode" type="stringType" use="required"/>
    <xs:attribute name="PublishedDateTime" type="dateTimeType" use="optional"/>
  </xs:complexType>
</xs:element>
```

Customisation : String to List

```
<!-- Example 4: String to List -->
```

```
<CustomiseItem StringToList="Yes">
```

```
  <Path>Package.Publisher.CompanyName</Path>
```

```
    <Enumeration Definition="LIXI Limited">LIXI</Enumeration>
```

```
    <Enumeration Definition="Westpac">Westpac</Enumeration>
```

```
</CustomiseItem>
```

Customisation : String to List


'CompanyName'
attribute now
accepts only the
two options:

- LIXI
- Westpac



CompanyName (attribute in Publisher)

The [company name](#) of the publisher

Path: Package.Publisher.CompanyName 
Label: Company Name
Use: required
A direct descendant of: [Package.Publisher](#)
This element uses the type: [custom0CompanyNameList](#)

LIXI Forum 2019

Mandatory Attribute.

Enumerations

Enumeration	Definition
LIXI	LIXI Limited
Westpac	Westpac

Schema Excerpt and Message Example

XML JSON

XML Schema Excerpt:

```
<xs:element name="Publisher" minOccurs="1" maxOccurs="1">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="PhoneNumber" type="phoneType" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="RelatedSoftware" minOccurs="0" maxOccurs="unbounded">... </xs:element>
      <xs:element name="Software" minOccurs="0" maxOccurs="1">... </xs:element>
    </xs:sequence>
    <xs:attribute name="CompanyName" type="custom0CompanyNameList" use="required"/>
  </xs:complexType>
</xs:element>
```

Customisation : String to Pattern

```
<!-- Example 5: String to Pattern -->
```

```
<CustomiseItem StringToPattern="Yes">
```

```
  <Path>Package.Content.Application.LoanDetails.ProductCode</Path>
```

```
  <CustomDocumentation>Must be a 6 digit number.</CustomDocumentation>
```

```
  <Pattern>\d{6}</Pattern>
```

```
</CustomiseItem>
```


Customisation : String to Pattern

'ProductCode'
attribute now
accepts only a
six-digit number



ProductCode (attribute in LoanDetails)

Captures an identifying code for the [loan product](#) applied for. This code is typically issued by the [lender](#) and enables the [lender's](#) systems to uniquely identify the product.

Path: [Package.Content.Application.LoanDetails.ProductCode](#)

Label: Product Code

Use: optional

A direct descendant of: [Package.Content.Application.LoanDetails](#)

This element uses the type: [custom1ProductCodePattern](#)

LIXI Forum 2019

Must be a 6 digit number.

Schema Excerpt and Message Example

XML JSON

XML Schema Excerpt:

```
<xs:element name="LoanDetails" minOccurs="0" maxOccurs="unbounded">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="AmountRequestedInForeignCurrency" type="amountInForeignCurrencyType" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="Borrowers" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="BulkReduction" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="Commission" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="DiscountMargin" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="DocumentationInstructions" type="documentationInstructionsType" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="DSH" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="EquityRelease" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="FeaturesSelected" minOccurs="0" maxOccurs="1">... </xs:element>
      <xs:element name="FundsDisbursement" type="fundsDisbursementType" minOccurs="0" maxOccurs="unbounded">... </xs:element>
      <xs:element name="Guarantor" minOccurs="0" maxOccurs="unbounded">... </xs:element>
      <xs:element name="LendingPurpose" minOccurs="0" maxOccurs="unbounded">... </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

Customisation : Min and Max Occurrences

```
<!-- Example 6: Min and Max Occurences -->
```

```
<CustomiseItem CustomMaxOccurs="Yes" CustomMinOccurs="Yes">
```

```
  <Path>Package.Content.Application.LoanDetails</Path>
```

```
  <CustomDocumentation>One loan per application.</CustomDocumentation>
```


```
  <CustomMaxOccurs>1</CustomMaxOccurs>
```

```
  <CustomMinOccurs>1</CustomMinOccurs>
```

```
</CustomiseItem>
```

Customisation : Min and Max Occurrences

'LoanDetails'
element now must
be included once
per application



LoanDetails (element in Application)

Information about an [individual credit facility](#) that is being applied for including but not limited to: [term loans](#); revolving [credit facilities](#); [overdrafts](#); [credit cards](#); equipment finance; commercial bills; margin [loans](#); [personal loans](#); and reverse mortgages.

Path: Package.Content.Application.LoanDetails 

minOccurs="1" maxOccurs="1"

Label: Loan Details

A direct descendant of: [Package.Content.Application](#)

LIXI Forum 2019

One [loan](#) per application.

Contents of Element

Type	Item	Definition
element	AmountRequestedInForeignCurrency ⓘ	The loan amount as requested in a foreign currency by the applicant for this loan account, exclusive of to-be-capitalised fees and/or LMI.
element	Borrowers ⓘ	Identifies the parties that are prospective borrowers on this loan account.
element	BulkReduction ⓘ	A bulk reduction is a scheduled future lump sum principal repayment. For example, the applicant may be yet to sell their home so take out bridging finance in order to fund the purchase of their new home pending the sale of their existing home. When the existing home is sold, they will make a lump sum payment in reduction of the loan. This payment is the bulk reduction. Another example would be where the applicant is expecting a superannuation payout.
element	Commission ⓘ	Contains information relating to the commission to be paid to the business partner that has sourced the loan application for the lender. This partner is typically a third party such as a mortgage aggregator or brokerage.
element	DiscountMargin ⓘ	Contains information about a discount in relation to the loan facility that the applicant claims they are entitled to. The discount claimed may be in the form of either a rate reduction margin or a dollar amount. The discount claimed is different from, and therefore may be in addition to, a general special offer that applies to all applicants, or discount that is available under a product package.
element	DocumentationInstructions ⓘ	Contains information specifying where the lender is to send the loan documents once the loan has been approved. This nomination over-rides an equivalent one at the Application level.

Customisation : Include in the Schema

```
<!-- Example 7: Include in the Schema -->
```

```
<CustomiseItem Whitelist="Yes">
```

```
  <Path>absLendingPurposeCodeList</Path>
```

```
  <CustomDocumentation>Only accepting applications for:
```

- Travel and holidays
- Purchase of household and personal goods

```
</CustomDocumentation>
```

```
  <Enumeration>ABS-241</Enumeration>
```

```
  <Enumeration>ABS-237</Enumeration>
```

```
</CustomiseItem>
```

Customisation : Include in the Schema

‘ABS LendingPurposeCode’

attribute now only

accepts two option:

- ABS 237

- ABS 241



absLendingPurposeCodeList (simpleType)

absLendingPurposeCodeList

Path: absLendingPurposeCodeList 

Label: absLendingPurposeCodeList

Type Base: xs:token

This element is at the root level of the schema.

LIXI Forum 2019

Only accepting applications for:

- Travel and holidays
- Purchase of [household](#) and personal goods

Enumerations

Enumeration	Definition
ABS-237	Purchase of household and personal goods
ABS-241	Travel and holidays

This Type is Used By:

Item	Definition
ABS LendingPurposeCode	The ABS code for this purpose for which the loan funds will be used by the applicant.
ABS LendingPurposeCode	Captures the ABS code for this purpose for which the loan funds will be used by the applicant.

Customised Search Function

We can use the search feature to view all the items with customised documentation:

- **CompanyName**
- **absLendingPurposeCodeList**
- **Publisher**
- **ProductCode**
- **LoanDetails**

Search Results

Forum|

CompanyName (attribute)

The company name of the publisher#### LIXI Forum 2019 Mandatory Attribute. (label: Company Name , path: Package.Publisher.CompanyName)

absLendingPurposeCodeList (simpleType)

absLendingPurposeCodeList#### LIXI Forum 2019 Only accepting applications for:- Travel and holidays- Purchase of household and personal goods (label: absLendingPurposeCodeList , path: absLendingPurposeCodeList)

Publisher (element)

The publisher of the specific XML file, being the party responsible for the content of the file as well as the work instruction, and to whom the response message would be delivered. For a mortgage broker sending an application to a lender, this would likely be the aggregator if they are providing the software, or perhaps the broker company or broker otherwise. For a lender requesting LMI, the lender is the publisher. For the LMI response, the LMI provider is the publisher.#### LIXI Forum 2019 LIXI Forum 2019 (label: Publisher , path: Package.Publisher)

ProductCode (attribute)

Captures an identifying code for the loan product applied for. This code is typically issued by the lender and enables the lender's systems to uniquely identify the product.#### LIXI Forum 2019 Must be a 6 digit number. (label: Product Code , path: Package.Content.Application.LoanDetails.ProductCode)

LoanDetails (element)

Information about an individual credit facility that is being applied for including but not limited to: term loans; revolving credit facilities; overdrafts; credit cards; equipment finance; commercial bills; margin loans; personal loans; and reverse mortgages.#### LIXI Forum 2019 One loan per application. (label: Loan Details , path: Package.Content.Application.LoanDetails)

Different LIXI Transaction Types and Versions

The same set of customisation instructions and be applied to different transaction types and versions of LIXI2



POST /customise/{transaction}/{version} Customise a specified version of a LIXI schema according to a set of customisation instructions

Parameters

Name	Description
x-api-key * required string (header)	The API key associated with this project <input type="text" value="IrrnpThRnN5zrdqMRB92F9WSyxWEhAkIaFv"/>
transaction * required string (path)	LIXI transaction schema type code associated with this project <input type="text" value="CAL"/>
version * required string (path)	LIXI transaction schema version number associated with this project <input type="text" value="2.6.21"/>
document string (query)	Documentation will be generated and returned as a .zip file <input type="text" value="true"/>
body * required string (body)	The LIXI customisation instructions Edit Value Model <pre><Customisations LIXIcode="FORUM" CustomisationCode="DEMO" customHeading="LIXI Forum 2019"></pre>

Simpler Schemas: How to customize the LIXI Schema

The LIXI customisation-by-restriction framework is available right now to LIXI members. Please ask me for more information on how to get started.

john.matthews@lix.org.au