

Creation of printable electronic documents in OpenRIMS

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Motivation

Currently, printable documents in electronic form are the most convenient way for information exchange. The OpenRIMS provides rich features for the creation of printable documents using pre-defined templates.

The data format for printable documents is Office Open XML¹. This standard complied with Digital Public Good Principles and allows the usage of popular free or commercially available office software. The OpenRIMS software considers this format “as is” without any vendor’s particularities.

The template of a printable document is a file in a plain word-processing (docx) format². The template can be created by the office software that supports this format – Open Office, Microsoft Word, etc.

The printable document is a result of the template processing by OpenRIMS software. While processing the OpenRIMS casts collaboration-related data into the right places of a template.

Templates should be uploaded to an OpenRIMS resource using Administrative-Configurations-Resources. This resource may be included in any electronic form

This manual consists of detailed examples and a template creation reference guide. To complete the example:

- The Sandbox installation should be available

¹ <http://officeopenxml.com/>

² <http://officeopenxml.com/anatomyofOOXML.php>

- Supervisor right in the Sandbox should be granted
- Additional Gmail login should be available to act as an applicant.
- Basic OpenRIMS Supervisor knowledge is required

An example

The template

Suppose we would like to provide applicants with the possibility to upload a company registration invoice. The company registration collaboration is a part of the OpenRIMS installation.

The template of the invoice can be found in Administrative-Configuration-Resources under URL “applicant.registration.invoice”. It is a plain docx file named “invoice1000.docx”. You can upload it for reference.

For applicants' usage, this resource is placed on the page “invoice” of electronic form “application.data”

Invoice

Attn to `$/contactName@literal` 2

1

Bank	Neverland Royal Bank
Bank Code	00001
Account #	26002345
Account name	NMRA fees for office <u><code>\$/map_location@office</code></u> 2
Amount, currency	1000 NLA
Payment details	Fee for registration new company <u><code>\$/prefLabel@literal</code></u> 2 at <u><code>\$/map_location@choice</code></u>

Additional users to register:

`$/users/users/0/prefLabel@literal`
`$/users/users/1/prefLabel@literal`
`$/users/users/2/prefLabel@literal`
`$/users/users/3/prefLabel@literal` 2
`$/users/users/4/prefLabel@literal`
`$/users/users/5/prefLabel@literal`
`$/users/users/6/prefLabel@literal`

This invoice has been issued at 2/14/2023 and will valid next 10 business days.

Chief of Financial Department Mr. Nevermore F Neverland



3

Figure 1 Template is a plain docx file. It doesn't contain fields, hidden data, and any other particularities

1. The plain text
2. The placeholders for collaboration-related data, furthermore EL³ expressions
3. The plain picture

Thus, to prepare a template you need to create a document and put into it EL expressions to inform OpenRIMS which collaboration-related data should be placed.

Invoice

Attn to *Phelim O'Neal*

Bank	Neverland Royal Bank
Bank Code	00001
Account #	26002345
Account name	NMRA fees for office Kathmandu
Amount, currency	1000 NLA
Payment details	Fee for registration new company My company at Bagmati Province, BHAKTAPUR, Bhaktapur Municipality

Additional users to register:

Zeb Stump

This invoice has been issued at 2/13/2023 and will valid next 10 business days.2/14/2023

Chief of Financial Department Mr. Nevermore F Neverland



Figure 2 Template that is resolved by OpenRIMS

EL expressions

The EL expressions in this example cast data from the application electronic form. The electronic form definition can be found in Administrative-Configurations-Data Configurator. The URL is “applicant.data”.

³ Expression Language inspired by good old <https://docs.oracle.com/javaee/6/tutorial/doc/gjddd.html>

Variables

time +	col +	Order +	Variables	ext	Class	Additional information
0	0	0	prefLabel		literals	Short company name
0	0	1	contactName		literals	contact person name
0	0	3	applicant_phone		strings	Phone number in international format +1(111)111-1 or +1(111)1111111
0	0	4	applicant_email		strings	Contact person email in a common format like nobody.nowhere@neverland.com
0	1	0	address		heading	Street address
0	1	1	street		literals	Street address like Arlington Ave 12/34 office 2
0	1	4	cityaddress		literals	City, Province, Zip Code
0	1	5	map_location		addresses	Select a location and put it to a map
100	100	0	users		things	Company's users
100	100	1	invoice		things	

- `{ }` are borders of the EL expressions, e.g., the placeholder. We believe that these symbols can't be used in normal text
- `/` which means that the data source is the application's electronic form. Refer to [The data sources]
- Variable names follow the `"/` each variable name should be separated by `"/`

A word following the `@` defines data that should be extracted into the document. We call it a “convertor”. Refer to [The whole application

A whole application as a printable document

The sequency of all pages including the main can be represented as a printable document using EL expression `{/@form}`.

An example can be found in [Annex 2 The whole application as a printable document]

The changes as a printable document

The `@changes` convertor is to inject modification data for the modification application or a list of changes in the application data for any other applications.

An example can be found in [Annex 3 Modifications]

The properties (today's date, author)

Convertor	Data	Example	/	this	process
@today	Today's date AD Gregorian calendar in the current locale Medium format	<code>{/@today}</code> will return 08.03.2023	+	-	-
@todayBS	Today's date BS Nepali calendar in short format, Arabic numbers	<code>{/@todayBS}</code> will return 2079-11-24	+	-	-
@todayBS1	Today's date BS Nepali calendar in short format, Nepali numbers	<code>{/@todayBS1}</code> will return २०७९-११-२४	+	-	-
@author	The name of the current user is listed in the: NMRA user configuration or Gmail record	<code>{/@author}</code> will return Phelim O'Neal	+	-	-

	Or Company application				
--	---------------------------	--	--	--	--

- Classes and convertors]

The expression `${/users/users/0/prefLabel@literal}` allows to take data from the list

<p>The variable on the first page is an additional page because the class is “things”</p> <table border="1"> <thead> <tr> <th>Variables</th><th>ext</th><th>Class</th></tr> </thead> <tbody> <tr><td>prefLabel</td><td></td><td>literals</td></tr> <tr><td>contactName</td><td></td><td>literals</td></tr> <tr><td>applicant_phone</td><td></td><td>strings</td></tr> <tr><td>applicant_email</td><td></td><td>strings</td></tr> <tr><td>address</td><td></td><td>heading</td></tr> <tr><td>street</td><td></td><td>literals</td></tr> <tr><td>cityaddress</td><td></td><td>literals</td></tr> <tr><td>map_location</td><td></td><td>addresses</td></tr> <tr><td>users</td><td></td><td>things</td></tr> <tr><td>invoice</td><td></td><td>things</td></tr> </tbody> </table>	Variables	ext	Class	prefLabel		literals	contactName		literals	applicant_phone		strings	applicant_email		strings	address		heading	street		literals	cityaddress		literals	map_location		addresses	users		things	invoice		things	<p>Additional page “applicant.persons” contains a list, e.g., variable class “persons”</p> <table border="1"> <thead> <tr> <th>Variables</th><th>ext</th><th>Class</th></tr> </thead> <tbody> <tr><td>users</td><td></td><td>persons</td></tr> </tbody> </table> <p>The first line in the list</p> <p>My company / Users / Next</p> <p>Users</p> <p><input type="checkbox"/> Geo Slump</p>	Variables	ext	Class	users		persons	<p>The electronic form of an element of the list is “applicant.person”</p> <table border="1"> <thead> <tr> <th>Variables</th><th>ext</th><th>Class</th></tr> </thead> <tbody> <tr><td>prefLabel</td><td></td><td>literals</td></tr> <tr><td>description</td><td></td><td>literals</td></tr> <tr><td>email</td><td></td><td>strings</td></tr> <tr><td>applicationResp</td><td></td><td>heading</td></tr> <tr><td>permitt_appl</td><td></td><td>dictionaries</td></tr> <tr><td>addmodification</td><td></td><td>dictionaries</td></tr> <tr><td>deregistration</td><td></td><td>dictionaries</td></tr> </tbody> </table>	Variables	ext	Class	prefLabel		literals	description		literals	email		strings	applicationResp		heading	permitt_appl		dictionaries	addmodification		dictionaries	deregistration		dictionaries
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users		things																																																															
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permitt_appl		dictionaries																																																															
addmodification		dictionaries																																																															
deregistration		dictionaries																																																															

The data sources

Data Source	Where to find it?	EL expression to access
Application electronic form	dictionary.guest.applications and, then, Administrative-Configuration-Data Configurations	<code>\${/ ... @...}</code>
Current on-screen electronic form	Administrative-Configuration-Data Configurations for this on-screen electronic form	<code>\${this/variable@...}</code>
Current NMRA workflow	Administrative-Processes-Workflows. Open the configuration for the activity, and refer to the field “Activity URL”. Then, find the electronic form by the URL in the Administrative-Configuration-Data Configurations	<code>\${process/activity_url/variable@...}</code>

Administrative - Authorities and Users - Processes - Configurations - datamgmt - Monitoring - changeProcessAdmin - Edit

Workflow Junit

Workflows / Background / Foreground / Next

Name
Foreground

Additional information
Test foreground activity

Activity URL
foreground

Checklist Dictionary URL
dictionary:checklist.empty

Executives

Name	
<input type="checkbox"/> Accountant	ROLE_ACCOUNTANT
<input type="checkbox"/> Applicant	DO NOT USE THIS FOR NOW
<input type="checkbox"/> Applicant	Responsible for approving the appl
<input type="checkbox"/> Inspector	Responsible for formal documents
<input type="checkbox"/> Inspector	ROLE_INSPECTOR
<input type="checkbox"/> Receiver	ROLE_RECEIVER
<input type="checkbox"/> Role Secretary	ROLE_SECRETARY

The whole application

A whole application as a printable document

The sequence of all pages including the main can be represented as a printable document using EL expression `$/@form`.

An example can be found in [Annex 2 The whole application as a printable document]

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@todayBS	Today's date BS Nepali calendar in short format, Arabic numbers	<code>\$/@todayBS</code> will return 2079-11-24	+	-	-
@todayBS1	Today's date BS Nepali calendar in short format, Nepali numbers	<code>\$/@todayBS1</code> will return २०७९-११-२४	+	-	-
@author	The name of the current user is listed in the: NMRA user configuration or Gmail record Or Company application	<code>\$/@author</code> will return Phelim O'Neal	+	-	-

Classes and convertors

addresses

Addresses allow users to select an administrative unit in a country and the geographical coordinate of a place inside this unit.

Convertor	Data	Example	/	this	process
@gis	Geographical coordinates selected	27.703430;85.318418	+	+	+
@office	NMRA office that serves this address	South Branch Office	+	+	+
@choice	All administrative units selected	Province, District, Municipality	+	+	+

@level1	The highest administrative unit selected	Province	+	+	+
@level2	An administrative unit inside the level1	District	+	+	+
@level3	An administrative unit inside the level2	Municipality	+	+	+
@level4	An administrative unit inside the level2	Neighborhood (rarely used)	+	+	+

atc

Not implemented yet.

Workaround 1. Use the “copy to prefLabel” configuration feature and get the selected value from the “prefLabel” literal

Workaround 2. Use “links” to select ATC

dates

Date input control.

Convertor	Data	Example	/	this	process
@date	Date AD Gregorian calendar in the current locale Medium format	Mar 12, 2023	+	+	+
@dateBS	Date BS Nepali calendar in short format, Arabic numbers	2032-01-01	+	-	+
@dateBS1	Date BS Nepali calendar in short format, Nepali numbers	२०३२-०१-०१	+	-	+
@years	Full AD Gregorian calendar years passed from a date given to the current date	12	+	-	+
@yearsBS	Full BS Nepali calendar years passed from a date given to the current date in Arabic numbers	12	+	-	+
@yearsBS1	Full BS Nepali calendar years passed from a date given to the current date in Nepali numbers	१२	+	-	+


dictionaries

Allows selection from the pre-defined choices. The selections may be single or multiple. The predefined choices may be single-level or multi-level.

Convertor	Data	Example	/	this	process
@choice	The current user's choice or choices	Province, District, Municipality for single choice or Province, District/Munitipality1, Munitipality2, Municipality 3 for multi-choice	+		+
@level1	The first level of choice	Province For single-level dictionary the same as the @choice	+		+
@level2	The choice inside the first level	District	+		+
.. Up to 9 levels			+		+
@office	In the case of the dictionary.admin.units the office that servers the unit selected	South Branch Office	+		+

documents

Documents that have been uploaded by a user.

Convertor	Data	Example	/	this	process
@filename	File names divided by "/"	mauricio.jpg/backtofuture.txt	+	-	+
@preflabel	File purpose or human readable names divided by "/"	State register certificate/Taxpayer certificate	+	-	+
@description	File descriptions divided by "/"	Form # 64. Allowance to do business in a country/Form # 63. Proof that the taxpayer number has been assigned	+	-	+
@choice		mauricio.jpg, backtofuture.txt	+	-	+
@image	Image if the first file is graphical		+	-	+

droplist

A droplist is a simplified representation of a one-level, single-choice dictionary.

Convertor	Data	Example	/	this	process
@label	The selected value	Diploma in Pharmacy	+	+	+
@description	The description of the selected value	Proficiency Certificate Level in Pharmacy	+	+	+

heading

Displays a label or a link to an external resource.

The EL expressions are not appropriate for this class.

intervals

An interval between two dates.

Convertor	Data	Example	/	this	process
@from	Begin of the interval AD Gregorian, the current locale middle format	16.02.2023	+	-	+
@fromBS	Begin of the interval BS Nepali short format, Arabic numbers	2079-11-04	+	-	+
@fromBS1	Begin of the interval BS Nepali short format, Nepali numbers	२०७९-११-०४	+	-	+
@to	End of the interval AD Gregorian, the current locale middle format	28.02.2023	+	-	+
@toBS	End of the interval BS Nepali short format, Arabic numbers	2079-11-16	+	-	+
@toBS1	End of the interval BS Nepali short format, Nepali numbers	२०७९-११-१६	+	-	+

legacy

Allows to select objects uploaded from the legacy data. Applicable for manual legacy data export, usage of the legacy data for new applications, etc.

The EL expressions are not appropriate for this class.

links

This component allows the usage of data from other applications. This component allows multi-choice; thus, the index should be used.

Suppose the first page of the application contains a “links” component “manufacturer”. Regardless of this component configuration for multi-choice, the EL should be `/manufacturers/0/@link_role`

Convertor	Data	Example	/	this	process
@link_role	The selected value	Main unit	+	-	+

All fields in the linked component are accessible the same way as for the “persons” component, e.g., `/manufacturers/0/prefLabel@literal`. See [persons] for details.

literals

The text input field. The “literals” allow distinct text for each language.

Convertor	Data	Example	/	this	process
@literal	Text from the input field	New Retail Pharmacy	+	+	+

logical

Yes/No/NA logical field

Convertor	Data	Example	/	this	process
@choice	The current user’s choice	Yes	+	-	+

numbers

Number input field

Convertor	Data	Example	/	this	process
@number	An input field for numbers	8 000	+	+	+
@numberBS	The number from the input field, Nepali numbers	८,०००	+	-	+

persons

Allows adding detailed records to the main data. Examples are pharmacy owners to a pharmacy or warehouses the wholesaler. It is possible to get data from each detailed record.

Suppose the owners of a pharmacy are available on the “owners” page of the application, using the “persons” component. This component is defined as a variable with the name “owners”

New Retail Pharmacy - Individually Owned

3 of 6

[swin03 pharmacy 1](#) / [Classifiers](#) / [Owners](#) / [Next](#)

Estimated Capital

Owners

	Name
<input type="checkbox"/>	Louise Poindexter

[swin03 pharmacy 1](#) / [Classifiers](#) / [Owners](#) / [Next](#)

New Retail Pharmacy - Individually Owned

Figure 4 Page is "owners", the variable is "owners"

Then `$/owners/owners/0` prefix will provide access to the whole data regarding the first person. For example, `$/owners/owners/0/prefLabel@literals` will return "Louise Poindexter"

registers

Provides assigning numbers, registration dates, and expiration dates like a typical filing system register.

Convector	Data	Example	/	this	process
@literal	Register number	123456789	+	+	+
@registered	Registration date AD Gregorian, current locale middle format	17.02.2023	+	+	+
@expired	Expiration date AD Gregorian, current locale middle format	22.09.2023	+	+	+
@registeredBS	Registration date BS Nepali short format, Arabic numbers	2079-11-05	+	+	+
@expiredBS	Expiration date BS Nepali short format, Arabic numbers	2080-06-05	+	+	+

Convertor	Data	Example	/	this	process
@registeredBS1	Registration date BS Nepali short format, Nepali numbers	२०७९-११-०५	+	+	+
@expiredBS1	Expiration date BS Nepali short format, Nepali numbers	२०८०-०६-०५	+	+	+

resources

Download documents, pictures, and templates.

The EL expressions are not appropriate for this class.

schedulers

Allows to run another follow-up application after the application will be approved. Examples are “scheduled renewal payment”, “scheduled inspection”, etc.

Convertor	Data	Example	/	this	process
@date	The current user’s choice	23.02.2024	+	+	+

strings

The text input field. The “strings” keep the same text for all languages.

Convertor	Data	Example	/	this	process
@literal	Text from the input field	Additional comments	+	+	+

things

An electronic form that placed at the right of the main form in the user’s application.

Convertor	Data	Example	/	this	process
@form	The whole electronic form	See [Annex 1 The whole electronic form as a printable document]	+	+	+

Unfortunately, currently, it is impossible to render the main page as a printable document.

Errors

To collect EL expression errors, place the special EL expression `$_ERROR_` at the end of the document

An example of an error message is

[choice: valueToString. Wrong data type choice/[label, description]]; [office: valueToString. Wrong data type office/[label, description]]

It will be a good idea not to place this EL into the production version.

Tools

Usually, vendors implement Open Office XML specifications strictly. In our opinion, the strictest implementation is the Microsoft Word issued after 2019. Also, we've tested it using Open Office.

Please note, that any office tools provide particular features like fields, improved layouts, etc. Please, avoid usage of them as possible. To make the layout it will be a good idea to use plain tables instead frames, anchors, etc.

Annex 1 The whole electronic form as a printable document

{/pharmacists/pharmacists/0@form} will produce

Henry Poindexter	
Name	Henry Poindexter
Full Name in Nepali	Генри Пойндекстер
Name of Tole	tole
Ward Number	12
Address	Bagmati Province, Bhaktapur, Bhaktapur Municipality
Date of Birth	Feb 16, 2004
Phone Number	+1(087)3451298
Email Address	henry@headless.com
Citizenship Number	qwqwqwqwq
Details	
Father's name	Father 1
Mother's name	Mother 1
Grandfather's name	Granpa 1
Pharmacist Qualification	
Academic Qualification	e) 2 Year Experience
Council Registration	Nepal Pharmacy Council
Council Registration Number/Professional Certificate No	www
certificate validity	
Valid from	Apr 6, 2022

Annex 2 The whole application as a printable document

Sometimes it is necessary to generate documents containing citations from applications and/or whole application data. The @form converter allows injecting to MS Word document the whole application or selected citations from it.

To inject the MS Word document into the whole application, use the expression `$/@form`. The result will look like the below:

20220208 Pharmacy	
register	
Register Number	000070
Registration Date	Feb 14, 2022
certificate	
Register Number	000080
Registration Date	Feb 7, 2022
Expiry Date	Feb 7, 2024
register	
Register Number	APPLICATION-PHARMACY/000225
Registration Date	Feb 6, 2022
register	
Register Number	000023
Registration Date	Mar 8, 2022
Name	20220208 Pharmacy
Name in Nepali	Аптека 20220208
Name of Tole	Tole Big
Ward Number	12
Address	
Bagmati Province, Bhaktapur, Bhaktapur Municipality	27.67753109506275;85.43701268236283
Classifiers	
System of Medicine	Allopathy, GA
Service	Government, A) Lower level Health facility

Company Detail

Estimated Capital	1 000 000
Name	Pilulkin Ltd
Name in Nepali	ОАО "Пилюлькин"
Name of Tole	tole
Ward Number	3
Address	
Bagmati Province, Bhaktapur, Bhaktapur Municipality	27.67748789429414;85.43674446146134
Phone Number	+1(067)3451297
Email Address	nobody.nowhere@google.com
Company Registration Number	222222

Authorized Person

Name	Isidora Covarubio de los Llanos
Full Name in Nepali	Айсидора Коварубио Де Лос Ллянос
Name of Tole	tole
Ward Number	1
Address	Bagmati Province, Bhaktapur, Bhaktapur Municipality
Date of Birth	Feb 2, 2004
Phone Number	+2(067)1234567
Email Address	nobody.nowhere@gmail.com
Citizenship Number	22222222

Pharmacists

Name	Henry Poindexter
------	------------------

Report Payment

Mode of payment	Cash
Payment date	Feb 8, 2022
Receipt Number	222q2
Name of Bank	Big Bank

Annex 3 Modifications

`$/@changes` in the “Owner modification” application will inject:

Owner		
	Previous	Modification
Estimated Capital	300 000	1 233 330
Name	Abdurahmann, Zeb Stump	Isidora Covarubio de los Llanos, Abdurahmann, Zeb Stump

For renewal, inspection, and/or any other follow-up application the expression `$/@changes` will produce the full list of changes that looks like the below:

Mar 4, 2022		
	Pharmacist Qualification	Isidora Covarubio de los Llanos
	Previous	Modification
Academic Qualification	a) Diploma in Pharmacy	c) Master's in Pharmacy
Council Registration	Byawasahi	Nepal Pharmacy Council
Council Registration Number/Professional Certificate No	A11223	B122345
certificate validity		
Valid from	Apr 14, 2019	Apr 17, 2022
Valid to	Apr 14, 2022	Apr 17, 2025

Jun 15, 2022		
	Pharmacist	20220208 Pharmacy
	Previous	Modification
Name	Isidora Covarubio de los Llanos	Henry Poindexter