ODTUG Kscope17



SAN ANTONIO, TEXAS ⋆ JUNE 25-29



PLEASE FILL OUT YOUR EVALUATIONS

Dimitri Gielis

APEX for Beginners

 www.apexRnD.be
 dgielis.blogspot.com
 @dgielis
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Dimitri Gielis

- Founder & CEO of APEX R&D
- 19+ years of Oracle Experience (OCP & APEX Certified)
- Oracle ACE Director
- “APEX Developer of the year 2009” by Oracle Magazine
- “Oracle Developer Choice award (ORDS)” in 2015
- Author Expert Oracle APEX
- Presenter at Conferences





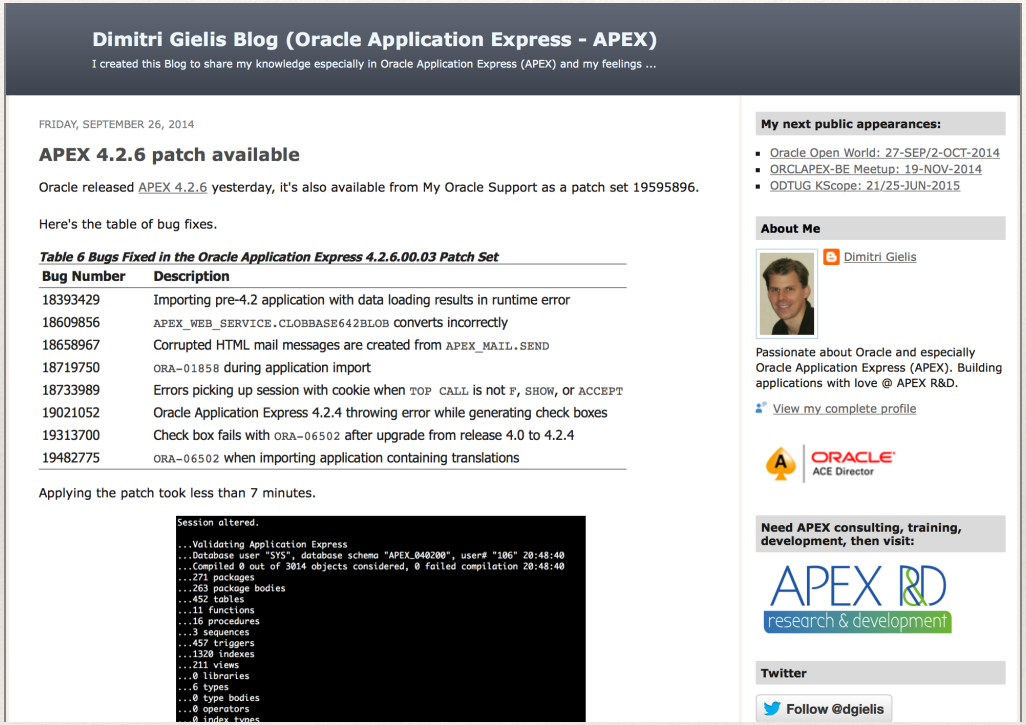


www.apexRnD.be

www.apexofficeprint.com

http://dgielis.blogspot.com

@dgielis



Dimitri Gielis Blog (Oracle Application Express - APEX)

I created this Blog to share my knowledge especially in Oracle Application Express (APEX) and my feelings ...

FRIDAY, SEPTEMBER 26, 2014

APEX 4.2.6 patch available

Oracle released APEX 4.2.6 yesterday, it's also available from My Oracle Support as a patch set 19595896.

Here's the table of bug fixes.

Table 6 Bugs Fixed in the Oracle Application Express 4.2.6.00.03 Patch Set

Bug Number	Description
18393429	Importing pre-4.2 application with data loading results in runtime error
18609856	APEX_WEB_SERVICE.CLOBBASE642BLOB converts incorrectly
18658967	Corrupted HTML mail messages are created from APEX_MAIL.SEND
18719750	ORA-01858 during application import
18733989	Errors picking up session with cookie when TOP CALL is not F, SHOW, or ACCEPT
19021052	Oracle Application Express 4.2.4 throwing error while generating check boxes
19313700	Check box fails with ORA-06502 after upgrade from release 4.0 to 4.2.4
19482775	ORA-06502 when importing application containing translations

Applying the patch took less than 7 minutes.

```
Session altered.

...Validating Application Express
...Database user "SYS", database schema "APEX_040200", user# "106" 20:48:40
...Compiled 0 out of 3014 objects considered, 0 failed compilation 20:48:40
...271 packages
...263 package bodies
...452 tables
...11 functions
...16 procedures
...3 sequences
...457 triggers
...1320 indexes
...211 views
...0 libraries
...6 types
...0 type bodies
...0 operators
...0 index types
```

My next public appearances:

- Oracle Open World: 27-SEP/2-OCT-2014
- ORCLAPEX-BE Meetup: 19-NOV-2014
- ODTUG KScope: 21/25-JUN-2015

About Me

Dimitri Gielis

Passionate about Oracle and especially Oracle Application Express (APEX). Building applications with love @ APEX R&D.

View my complete profile

ORACLE ACE Director

Need APEX consulting, training, development, then visit:

APEX R&D research & development

Twitter

Follow @dgielis



How starting

This is Mathias Vanhove



- MSc. Applied Computer Science
- Skillset:
  - ✓ Specialization: Usability
  - ✓ Great: HTML 5, Css3
  - ✓ Ok: Javascript, C#/.NET, MySQL
  - ✓ None: APEX, Oracle DB, PL/SQL
- Ambitious
- Eager to learn

The things Mathias Loves

- Usability and User Centered Design
- Structure
- Consistency
- Reusability
- Customizations

Mathias' Learning Goal

Develop an APEX application

and learn all the necessary elements to do so.

Necessary elements?

- APEX x
- SQL ±
- PL/SQL x
- Oracle DB x
- HTML 5 ✓
- CSS3 ✓
- Javascript ±



How Mathias started



1. Two introduction sessions

APEX R&D research & development

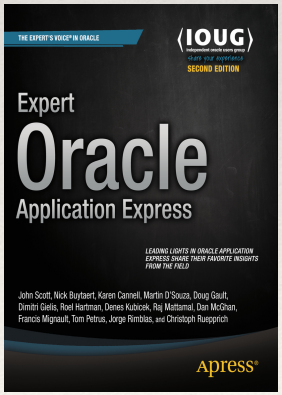
2. APEX R&D's Guide



3. Book by Steven Feuerstein

ORACLE Application Express

4. Online Guide

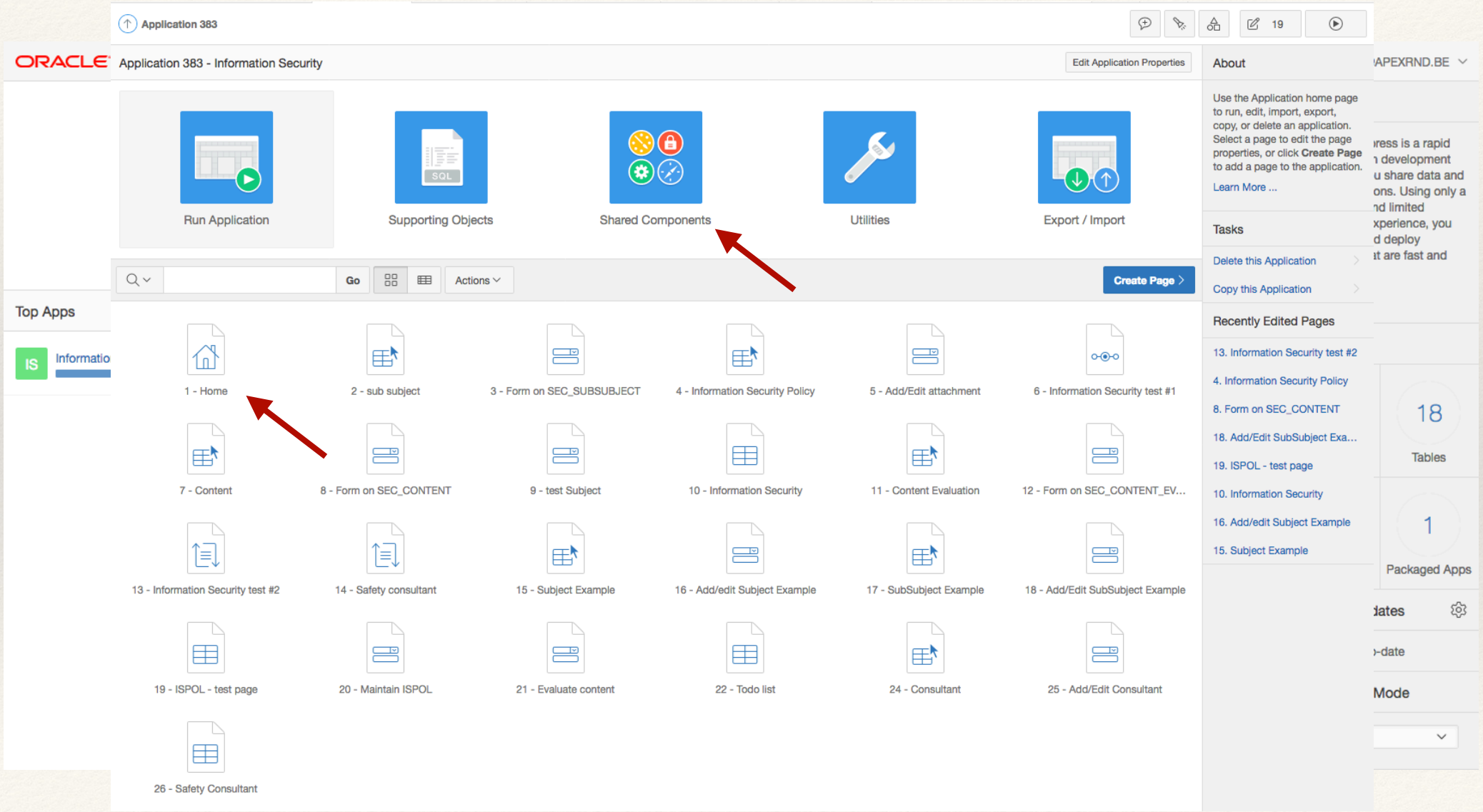


5. Expert Oracle APEX

Structure of APEX

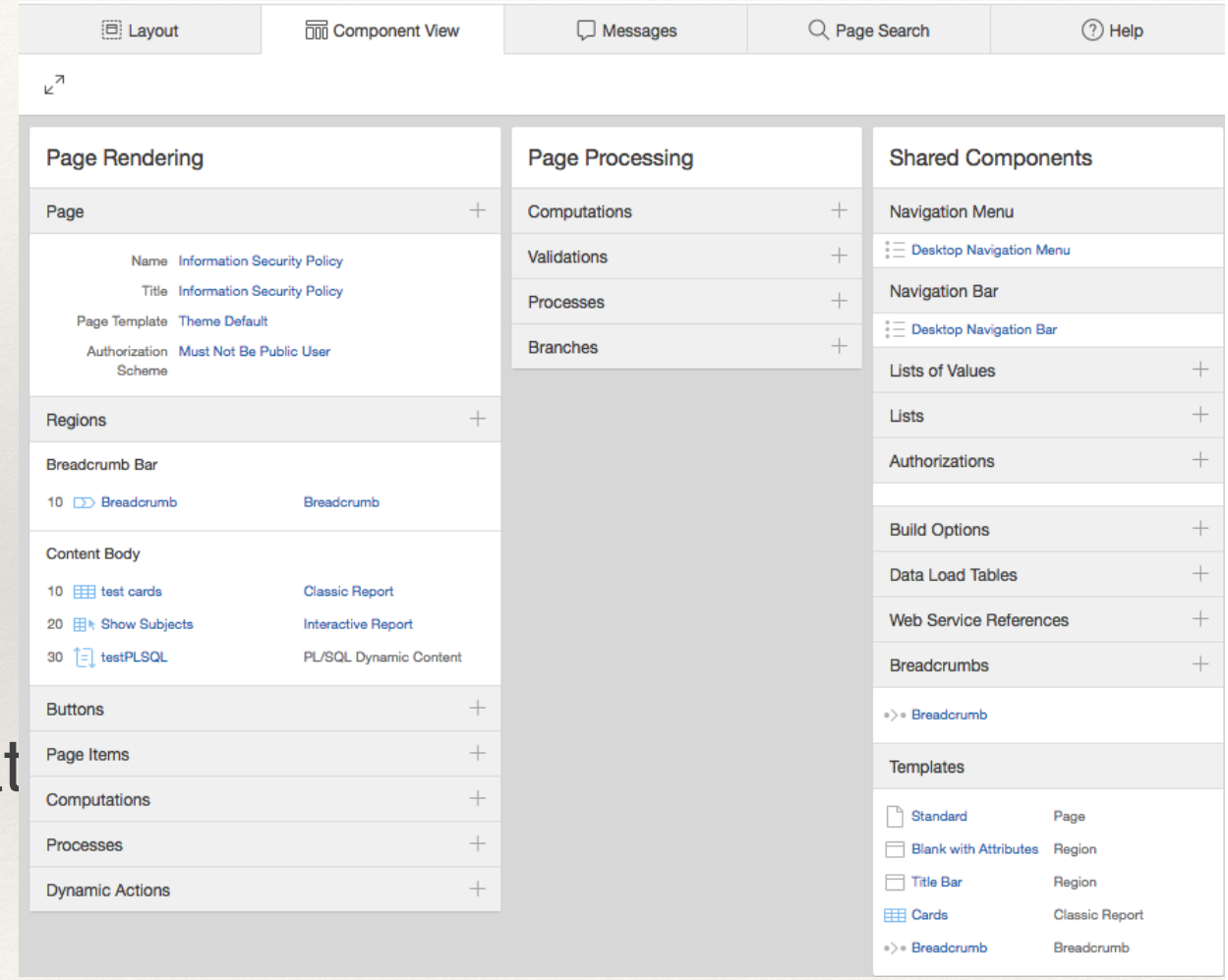
- APEX Page — App Builder
- SQL Workshop
- Shared Components

Structure of APEX



APEX Page: Elements you should understand

- Regions:
  - Possible types
  - Template options
- Dynamic Actions
- Bind variables
- Process vs. Computat
- Define vs. Declare



SQL Workshop

- Use the Wizard to build tables
- Get a good understanding of:
  - Sequences
  - Triggers

Shared Components

- List Of Values
- Navigation:
  - Navigation Menu
  - Breadcrumbs
  - Navigation Bar List
- Templates
- etc.

Mathias' APP

An easy to manage Information Security Document/ Guideline to be compliant for the European GDPR legislation.

Information Security

- Subjects
- Sub-subjects
- Content items for each sub-subject
- Auditing/Evaluation system
- Todo system
- Maintainable

Mathias' problems

Concatenate two values in a select list

Auto fill date

Ways to add help text

Building custom templates

Charts

Add PL/SQL to template

Page Items

Refresh page dynamic action

Working dynamically with cards

Views vs inline SQL-join

Table id-sequence + triggers

Select list: Dynamic Actions

Custom dynamic linking to pages

Configure SQL Developer

List Of Values

Oracle Advisor Utility

Clear cache

Define vs. Declare

Debugging

Customizations using PL/SQL

Subsitution Strings

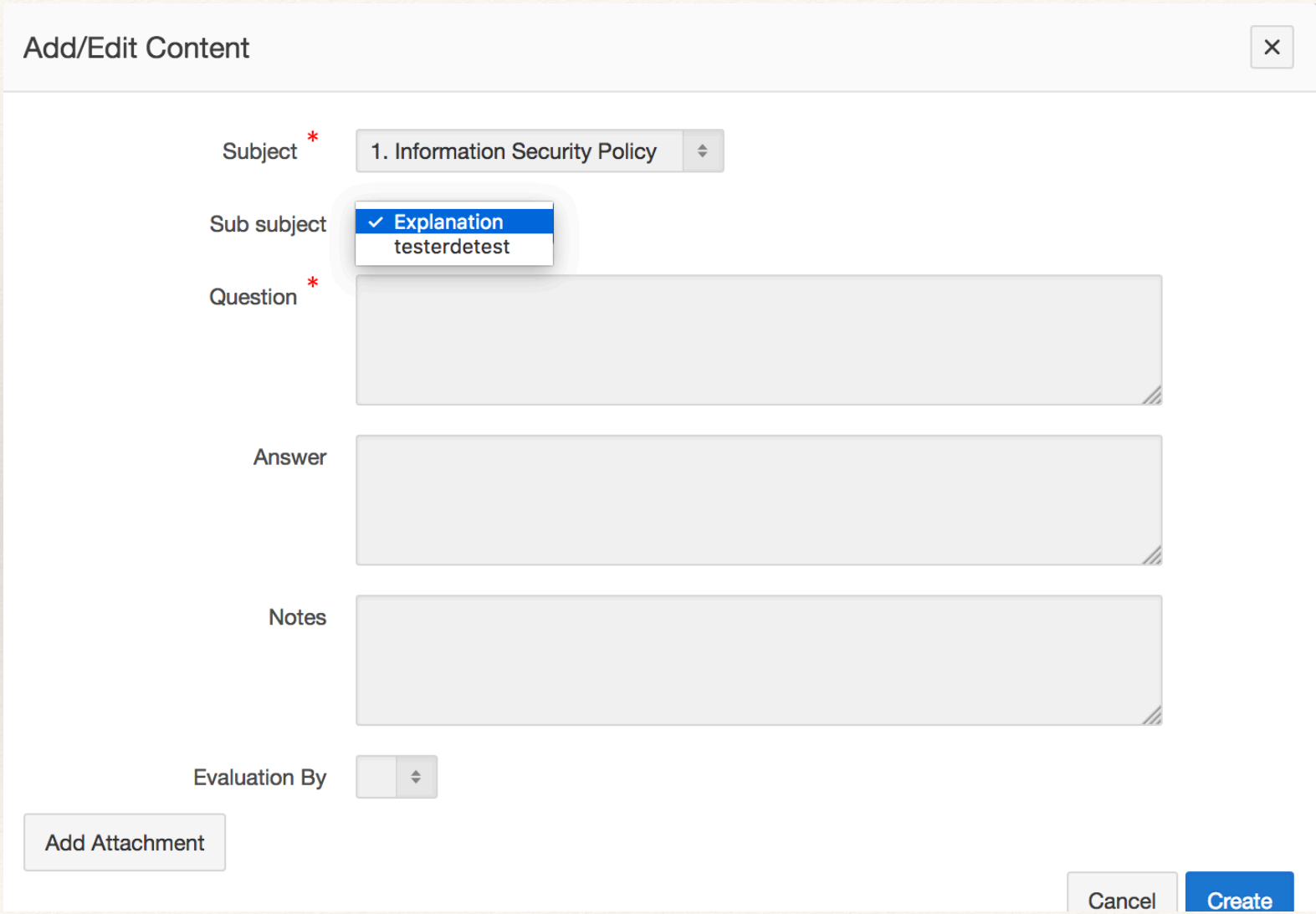
Changing templates to a custom one

Escape HTML characters

Add HTML fields to Classic Report

PL/SQL package with a function

Mathias' problem



Mathias' problems

Concatenate two values in a select list

Concatenate two values in a select list

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Mathias' problems

Information Security Policy

Information Security Policy

Number of TODO's:

Number of bad scores:

Safety consultant

Number of TODO's:

Number of bad scores:

Safety management

Number of TODO's:

Number of bad scores:

Inventory

Number of TODO's:

Number of bad scores:

Access rights

Number of TODO's:

Number of bad scores:

IT-infrastructure

Number of TODO's:

Number of bad scores:

Agenda

Number of TODO's:

Number of bad scores:

Tracking policy

Number of TODO's:

Number of bad scores:

Tests

Number of TODO's:

Number of bad scores:

Incident reports

Number of TODO's:

Number of bad scores:

Audit reports

Number of TODO's:

Number of bad scores:

Mathias' problems

Concatenate two values in a select list

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Building Custom Templates

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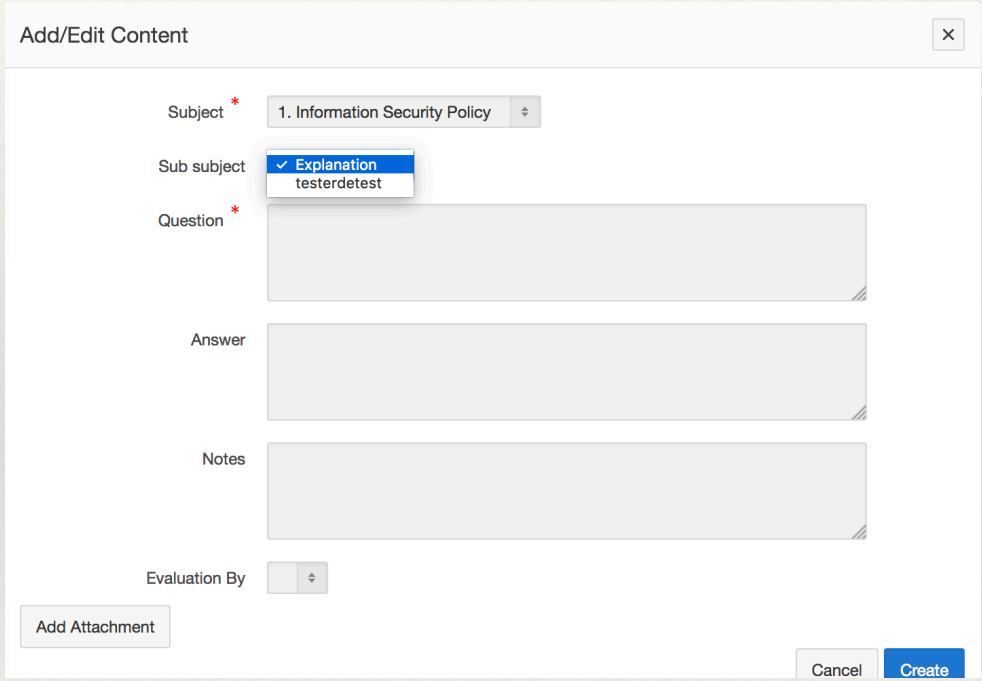
Escape HTML characters

Add HTML fields to Classic Report

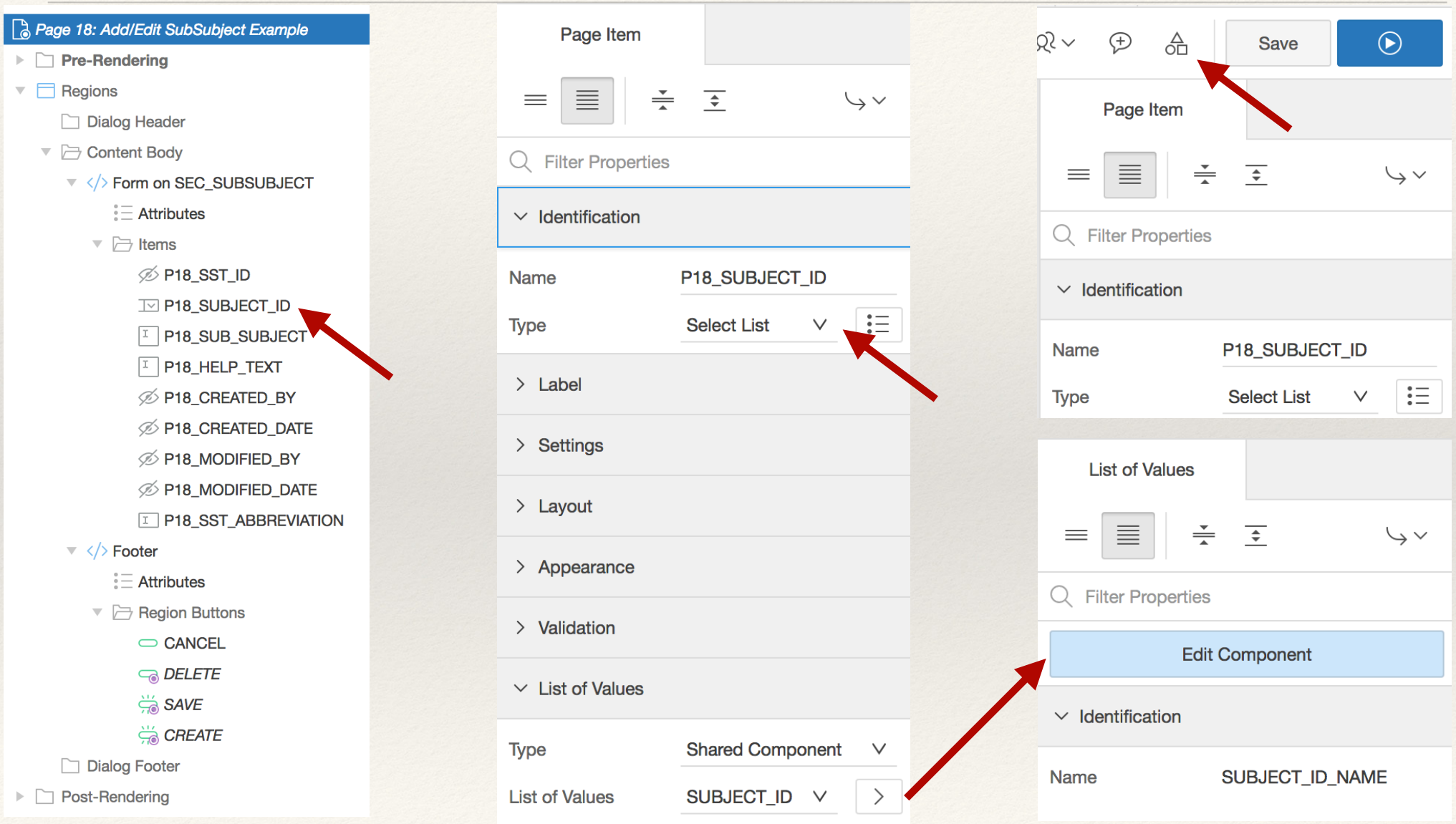
PL/SQL package with a function

Problem #1: Select List

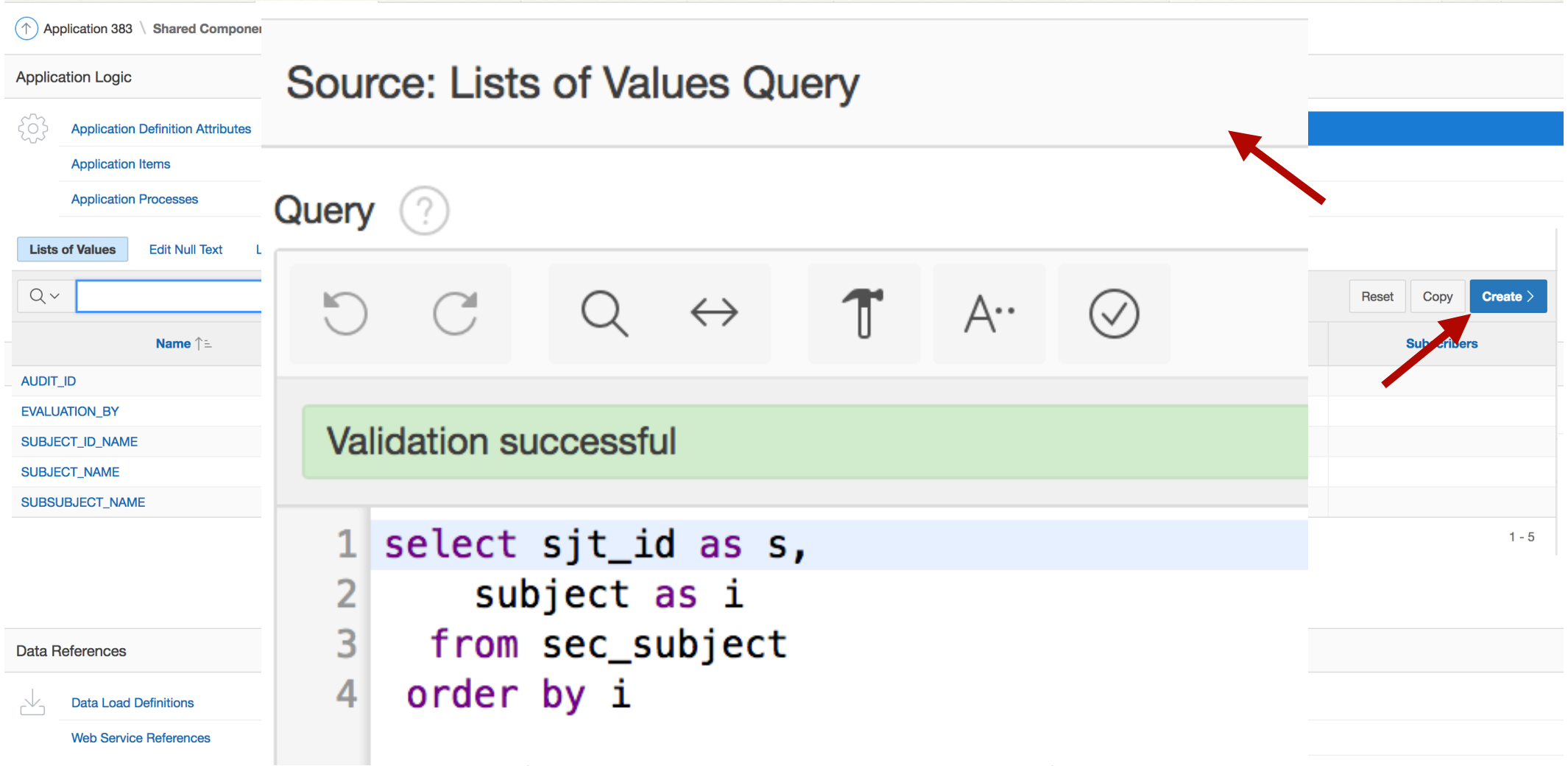
- List Of Values
- Concatenate two values
- Dynamic Action
- Dynamic content change



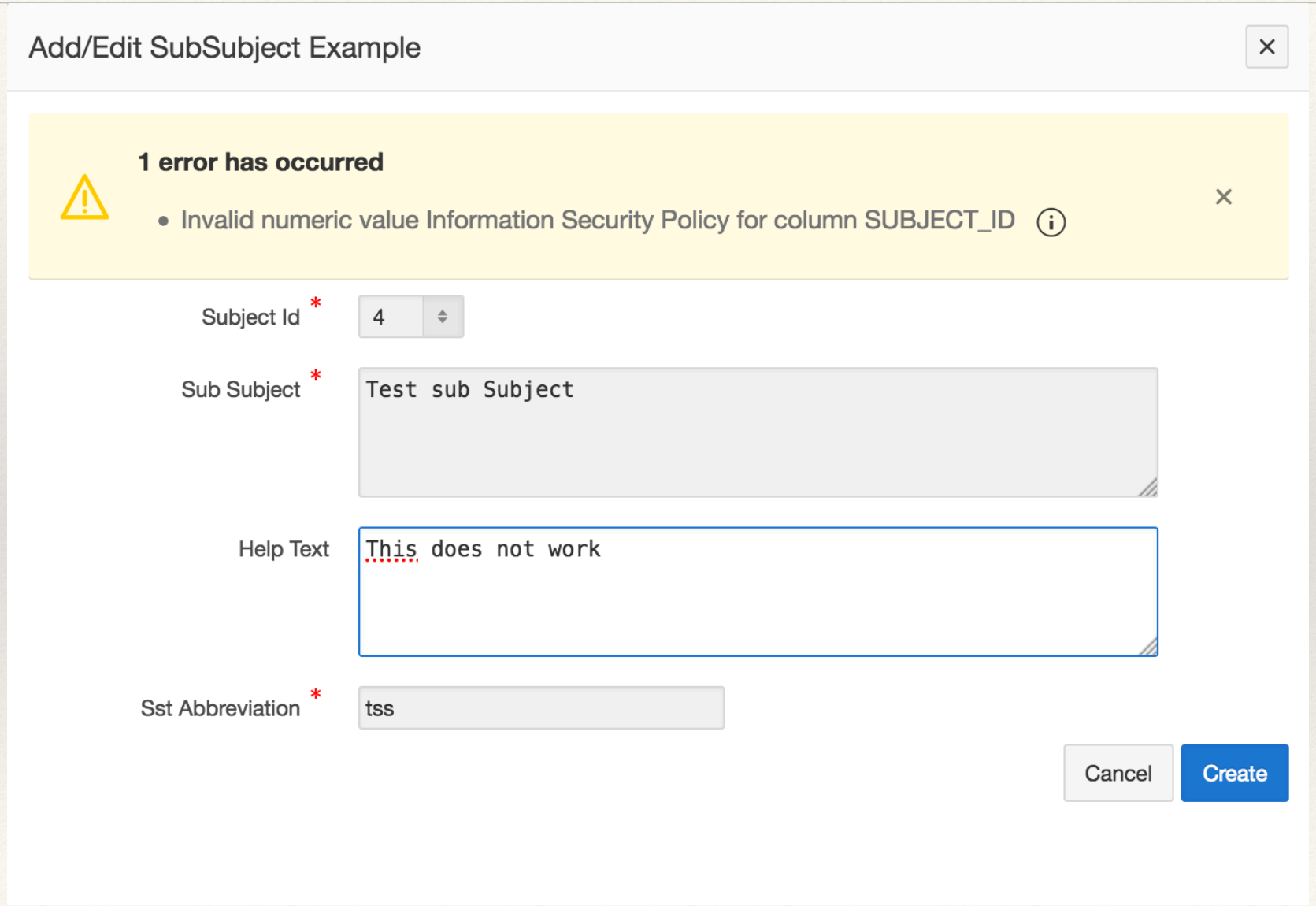
First step: build LoV query



First step: build LoV query



First step: build LoV query



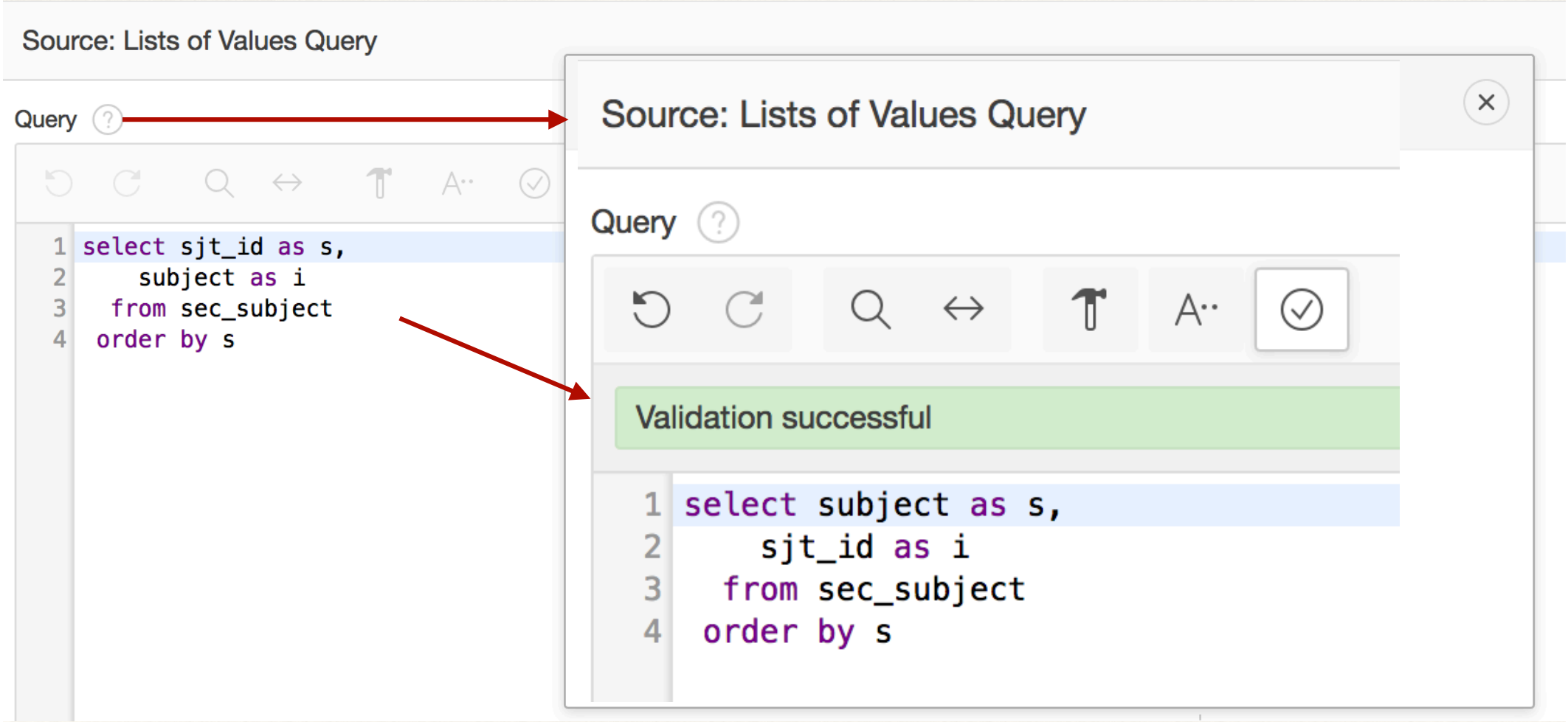
First step: build LoV query

Technical Info (only visible for developers)

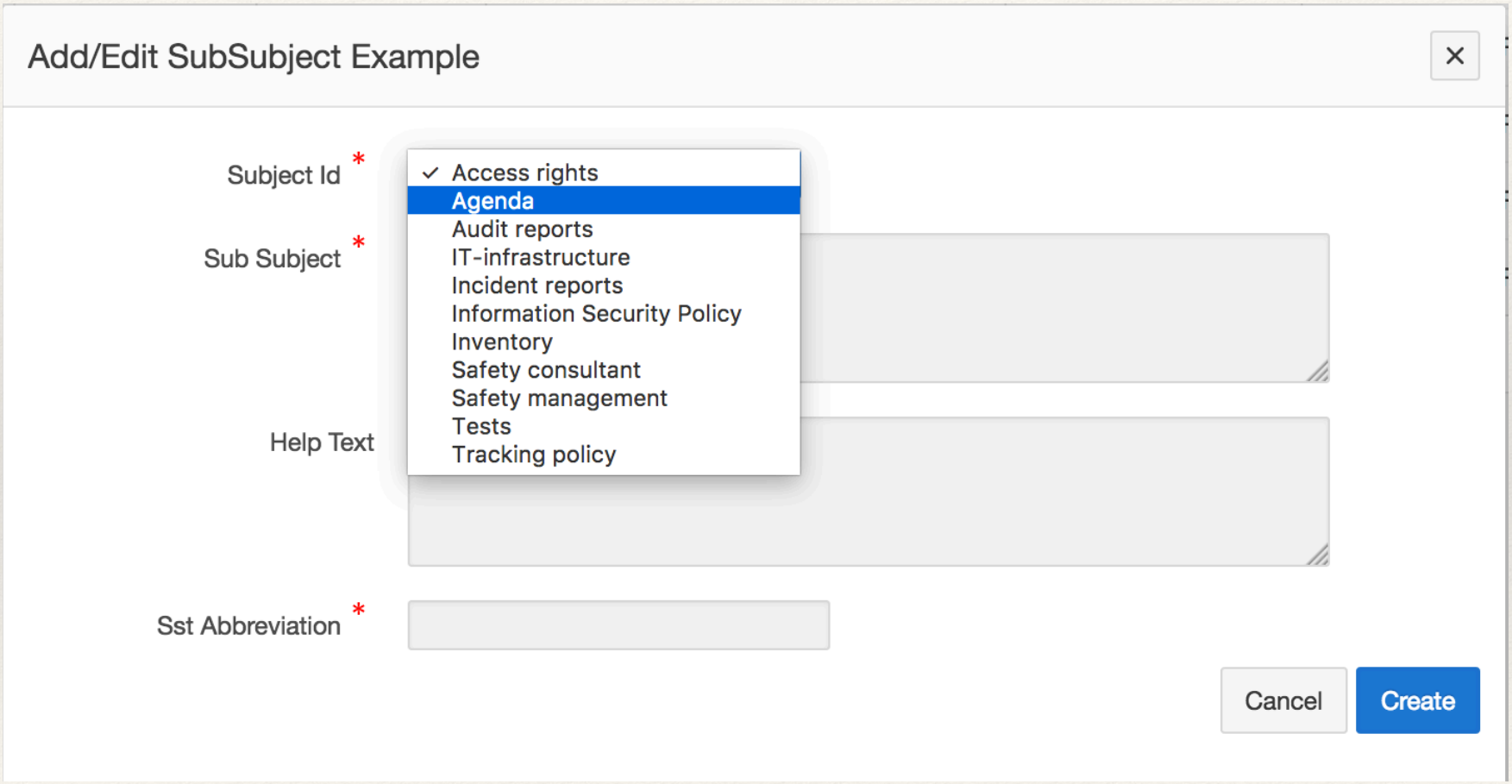
- is_internal_error: false
- apex_error_code: WWV_FLOW_DML.DML_INVALID_NUMBER_ERR
- ora_sqlcode: -6502
- ora_sqlerrm: ORA-06502: PL/SQL: numeric or value error: character to number conversion error
- component.type: APEX_APPLICATION_PAGE_PROCESS
- component.id: 2391097677676619
- component.name: Process Row of SEC_SUBSUBJECT
- error_backtrace:

```
ORA-06512: at "APEX_050100.WWV_FLOW_DML", line 1559
```

First step: build LoV query



First step: build LoV query



Second step: Concatenate

- Google is your friend!
- Difficulties to google
  - Oracle APEX
- Easy to do

Second step: Concatenate

Source: Lists of Values Query

Query

```
1 select sjt_id || '. ' || subject as s,
2     sjt_id as i
3   from sec_subject
4  order by s
```

Source: Lists of Values Query

Query

```
1 select sjt_id || '. ' || subject as s,
2     sjt_id as i
3   from sec_subject
4  order by sjt_id
```

Add/Edit SubSubject Example

Subject Id *

Sub Subject *

Help Text

Sst Abbreviation *

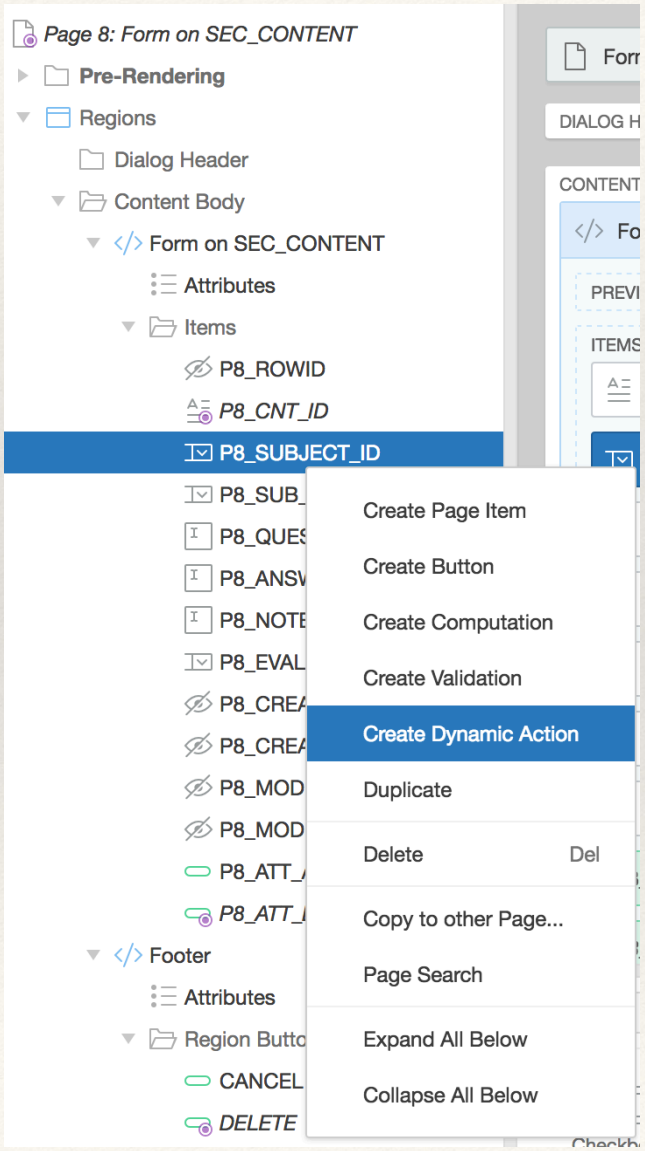
- ✓ 1. Information Security Policy
- 2. Safety consultant
- 3. Safety management
- 4. Inventory
- 5. Access rights
- 6. IT-infrastructure
- 7. Agenda
- 8. Tracking policy
- 9. Tests
- 10. Incident reports
- 11. Audit reports

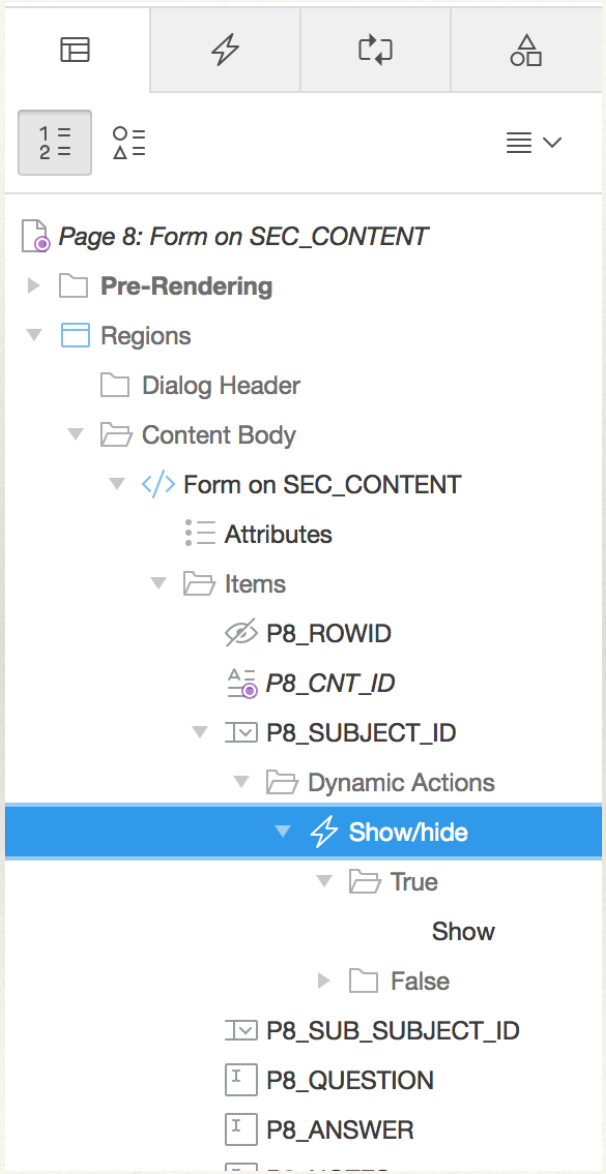
Cancel Create

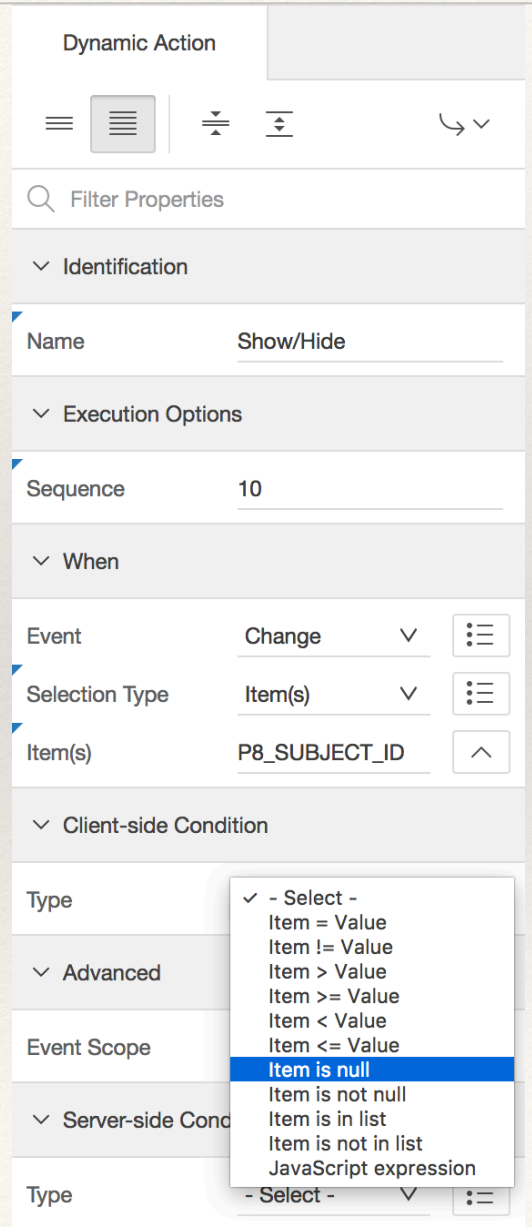
Third step: Dynamic Action

- Not so hard when you followed the APEX R&D Course
- Add a Dynamic Action
- Use Change event

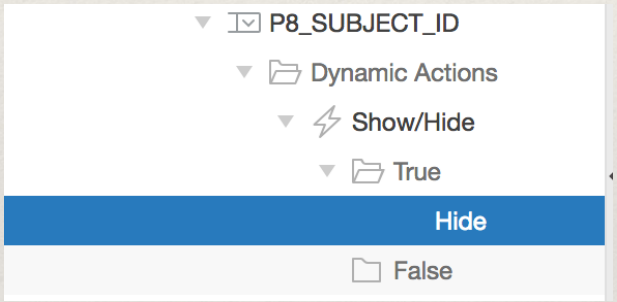
Third step: Dynamic Action

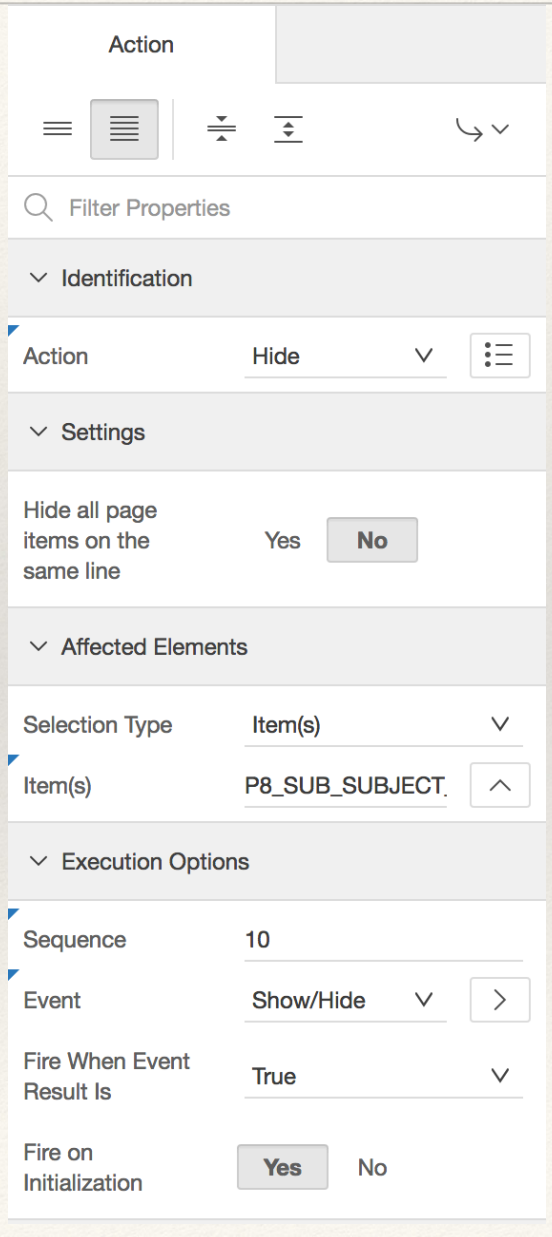




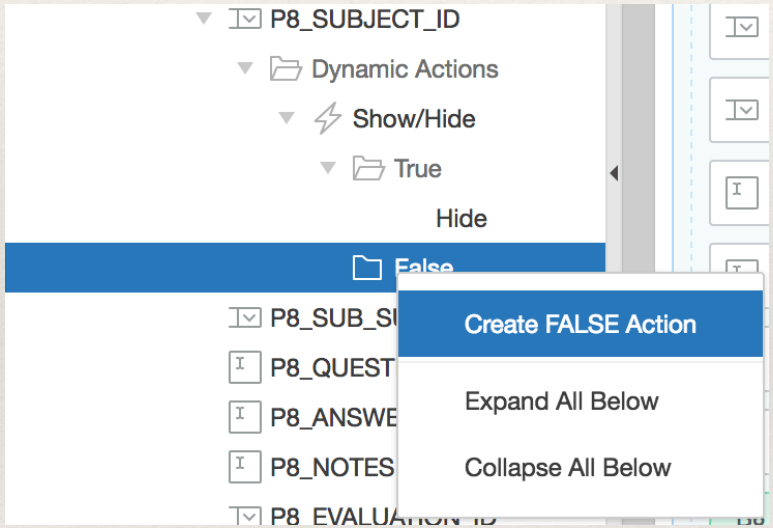


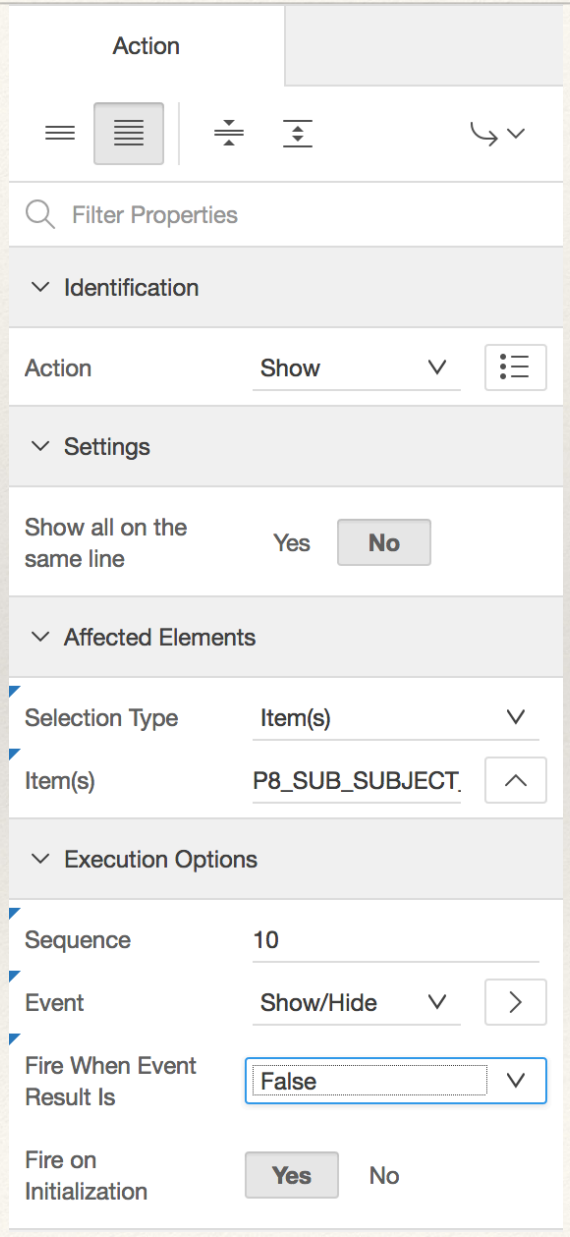
Third step: Dynamic Action



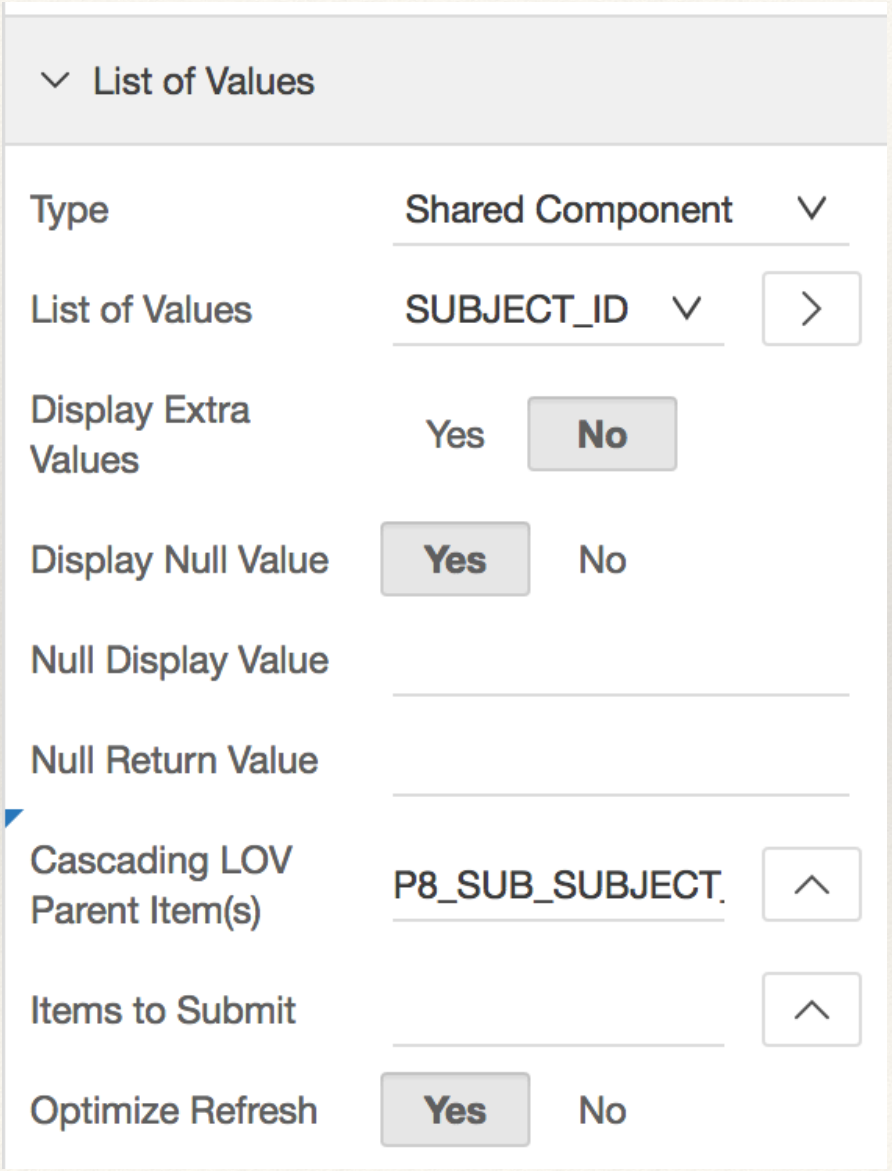


Third step: Dynamic Action

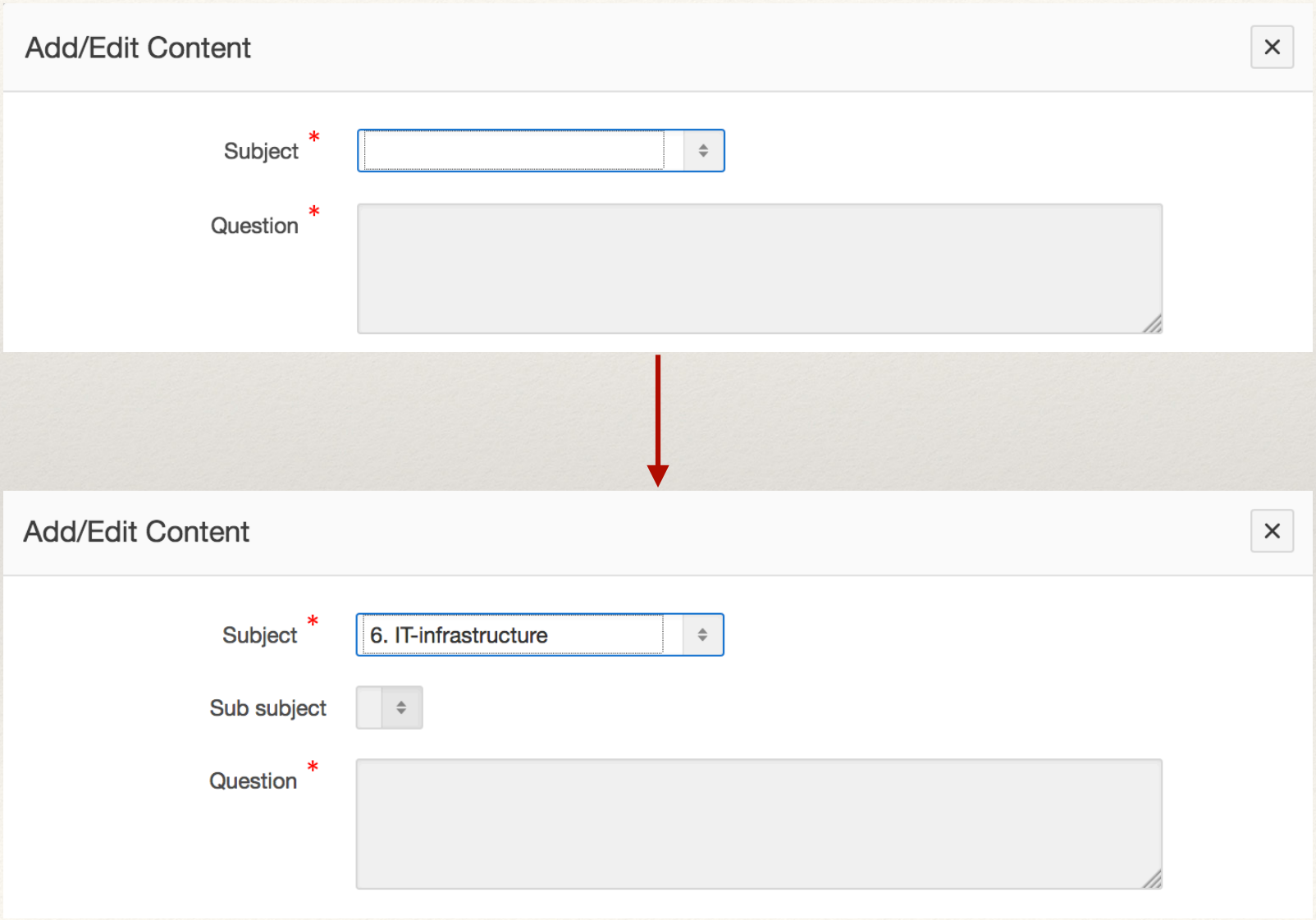




Third step: Dynamic Action



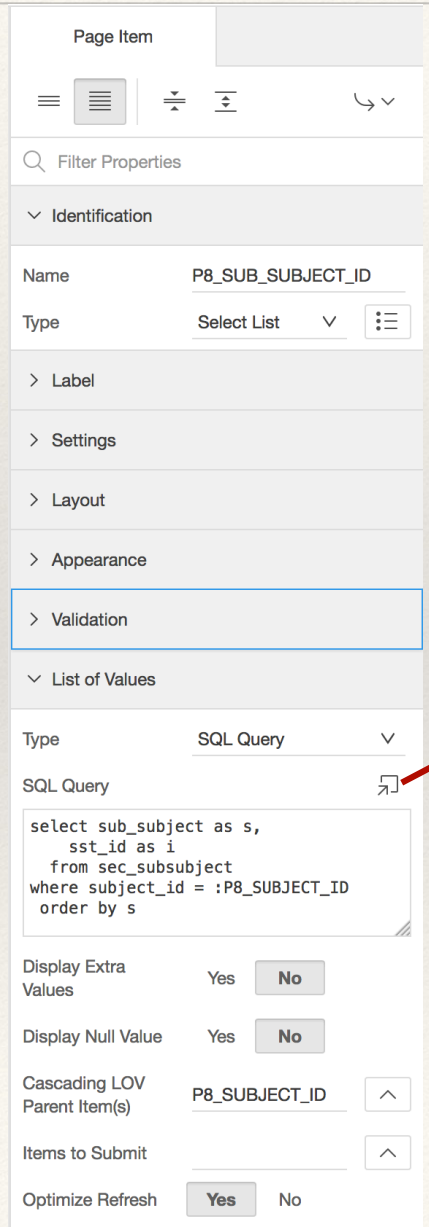
Third step: Dynamic Action

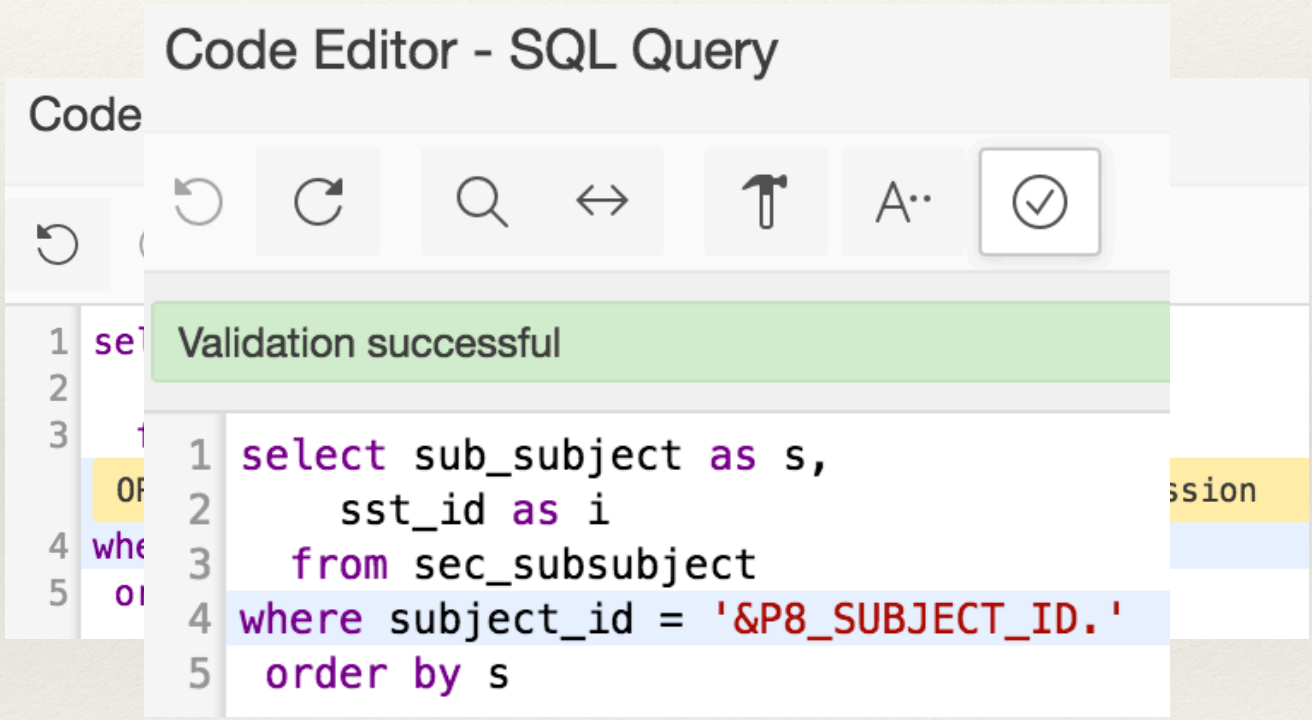


Fourth Step: Dynamic content

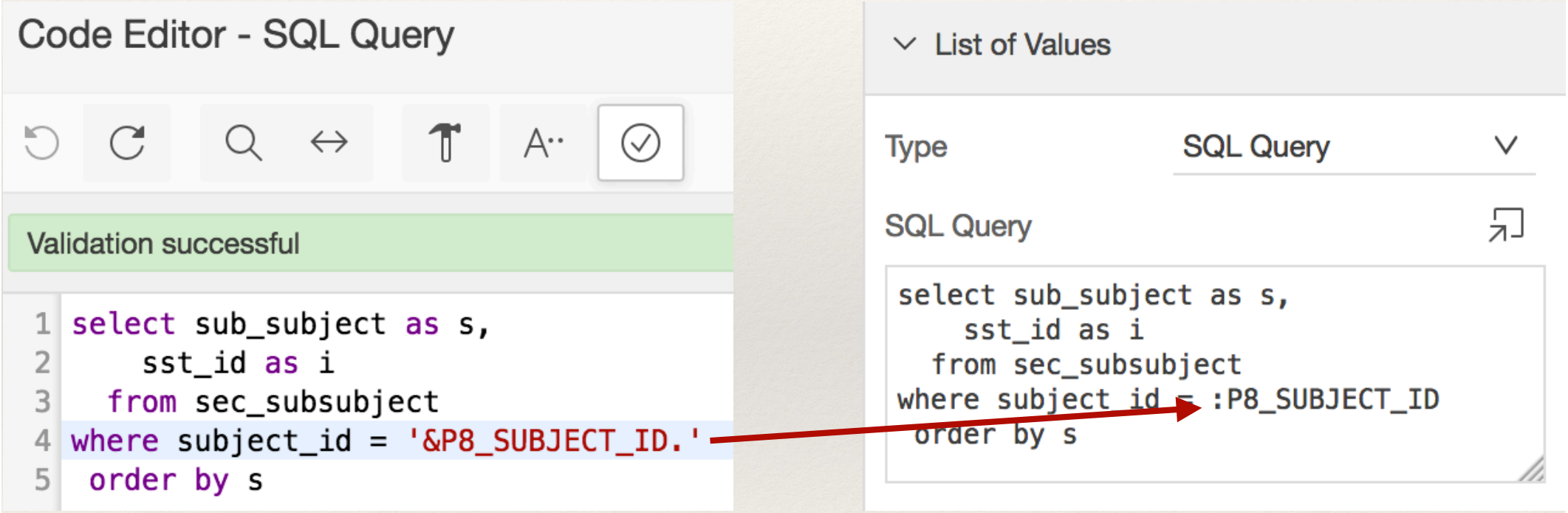
- Change content of Sub-subject based on selection of subject
- More advanced step
- Substitution strings vs Bind variables

Fourth Step: Dynamic content

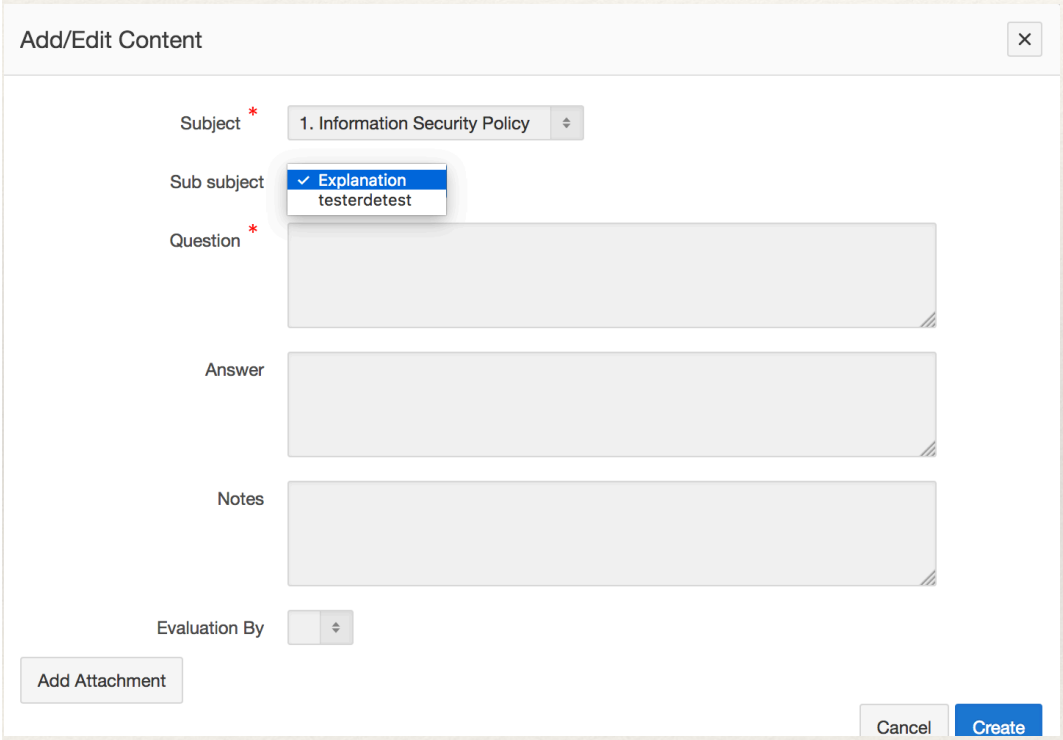


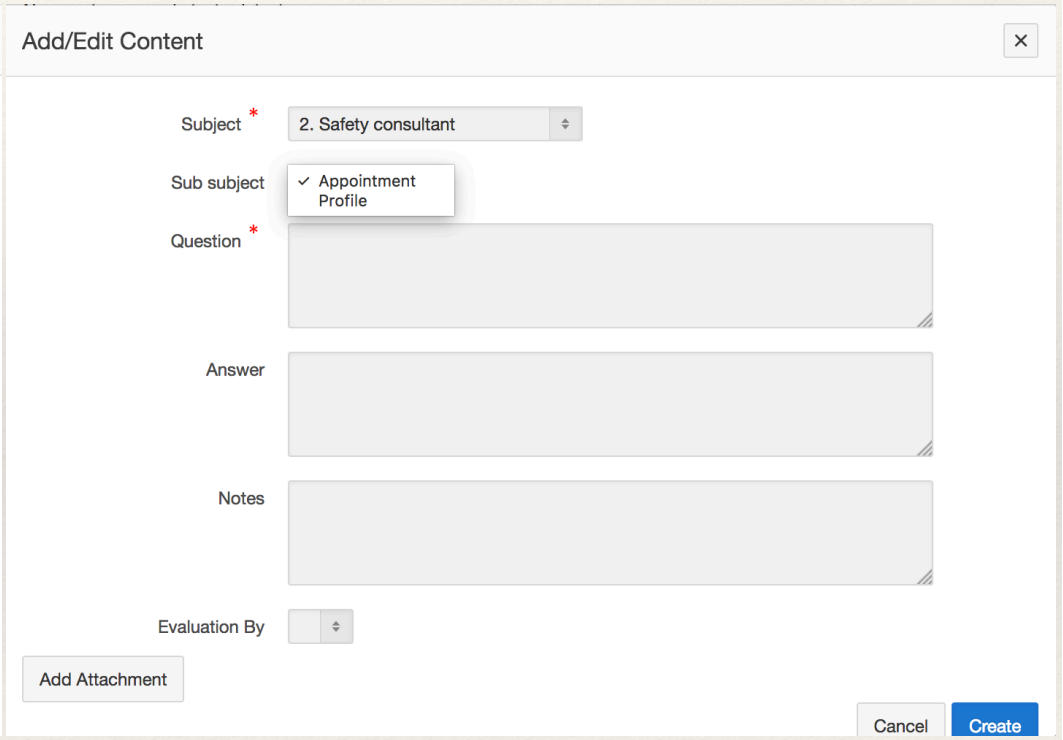


Fourth Step: Dynamic content



Fourth Step: Dynamic content





Some useful advice Mathias found when exploring the coding conventions of APEX R&D

7.13 Use of bind variables

In Computations, Processes, PL/SQL Code, SQL in reports etc. always use bind variables. Never use a substitution string.

BAD (substitution string):

```
select empno
 from emp
where ename like '%&P1_SEARCH.%'
```

GOOD (bind variable):

```
select empno
 from emp
where ename like '%' || :P1_SEARCH || '%'
```

Some useful advice Mathias found when exploring the Oracle Builder User Guideline

2.7.2.7 APP_IMAGES

Use this substitution string to reference uploaded images, JavaScript, and cascading style sheets that are specific to a given application and are not shared over many applications. If you upload a file and make it specific to an application, then you must use this substitution string, or bind variable. Table 2-10 describes the supported syntax for referencing `APP_IMAGES`.

Table 2-10 APP_IMAGES Syntax

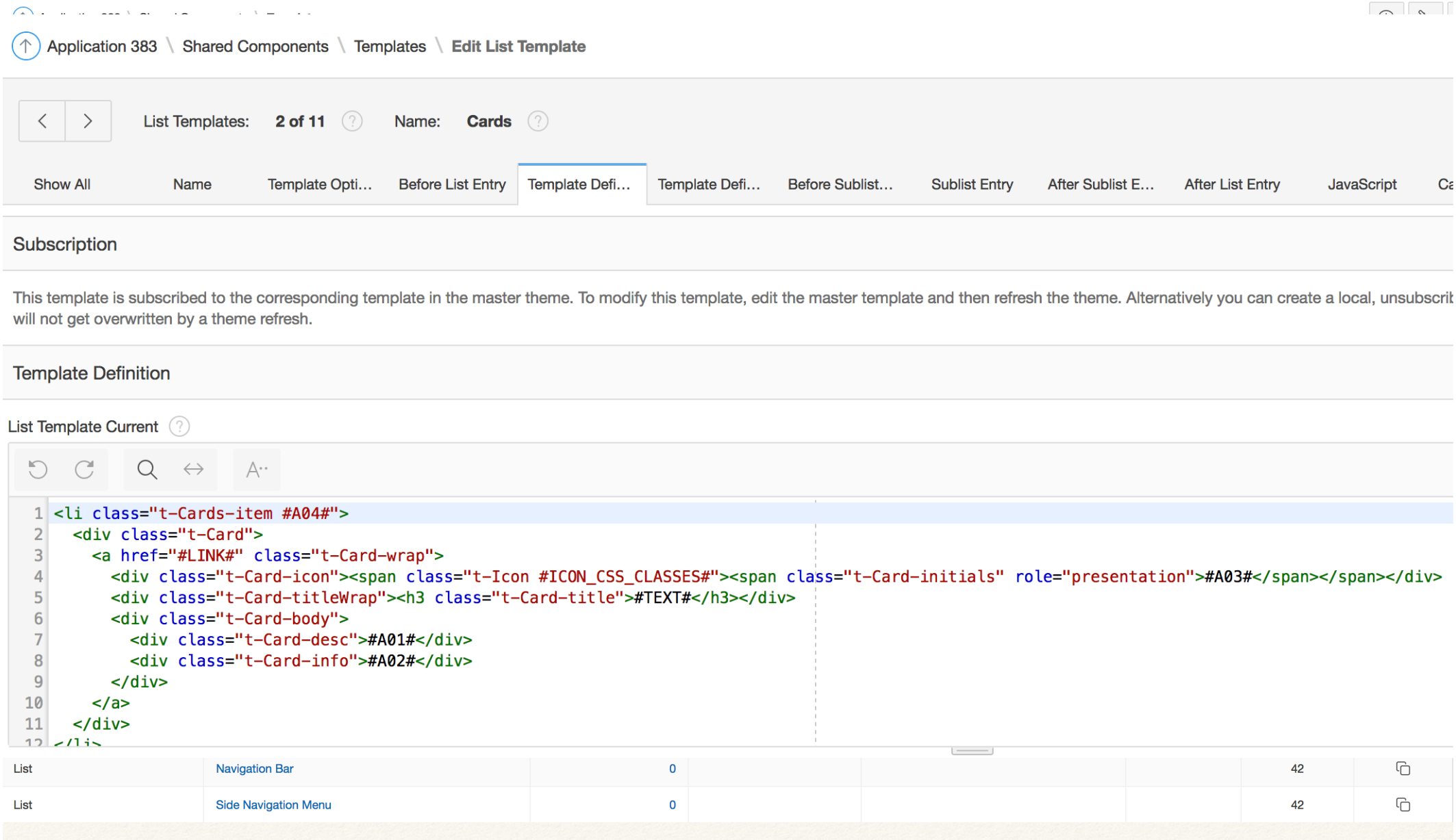
Reference Type	Syntax
Bind variable	`:APP_IMAGES`
Direct PL/SQL	Not available.
PL/SQL APP_IMAGES Syntax	`V('APP_IMAGES')`
Substitution string	`&APP_IMAGES.`
Template substitution	`#APP_IMAGES#`

https://docs.oracle.com/database/121/HTMDB/concept_sub.htm#HTMDB03022

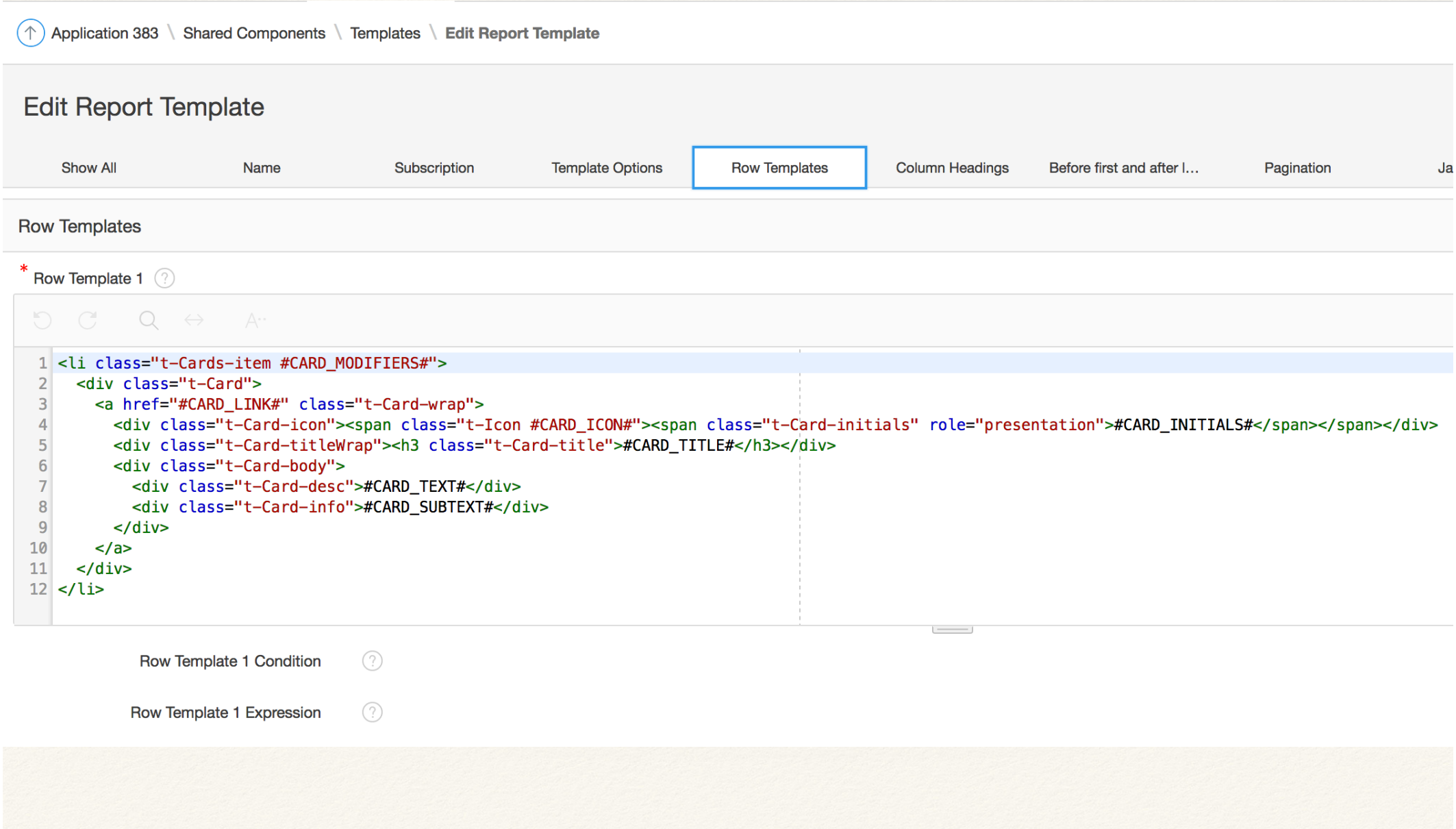
Problem #2: Templates

- Working dynamically with Cards
  - Where can I find the templates?
  - Template substitution
- Making an own template
  - Another problem
  - PL/SQL?

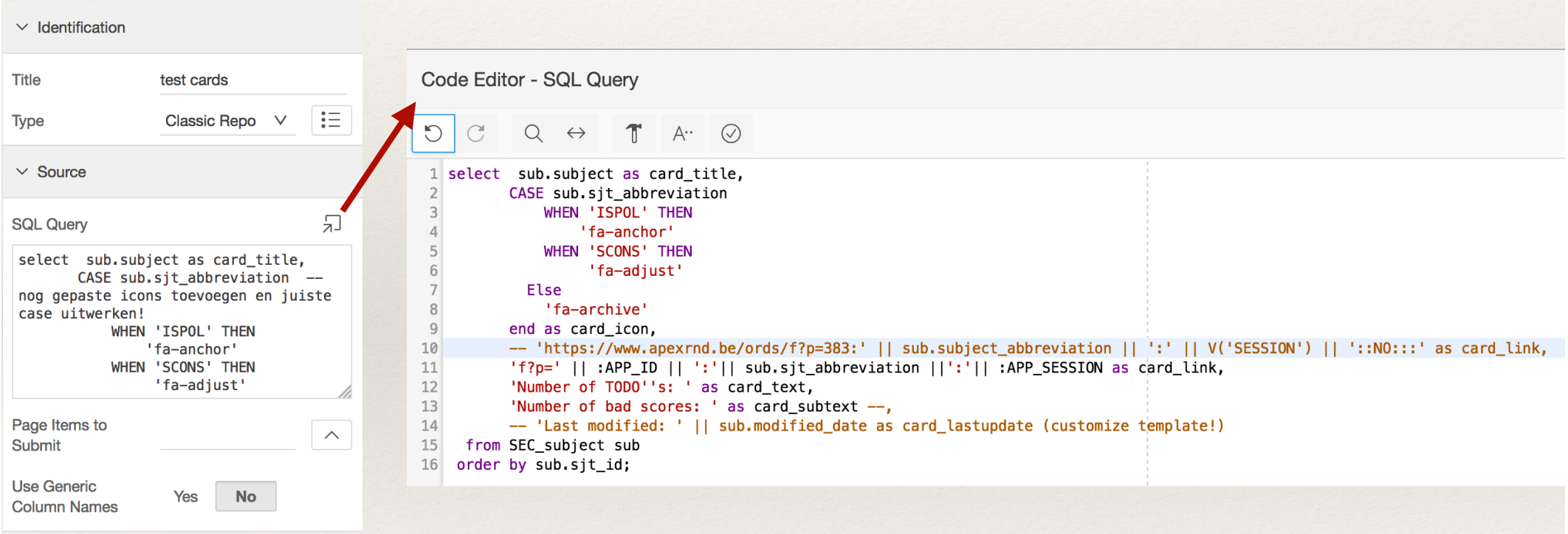
Working with Cards



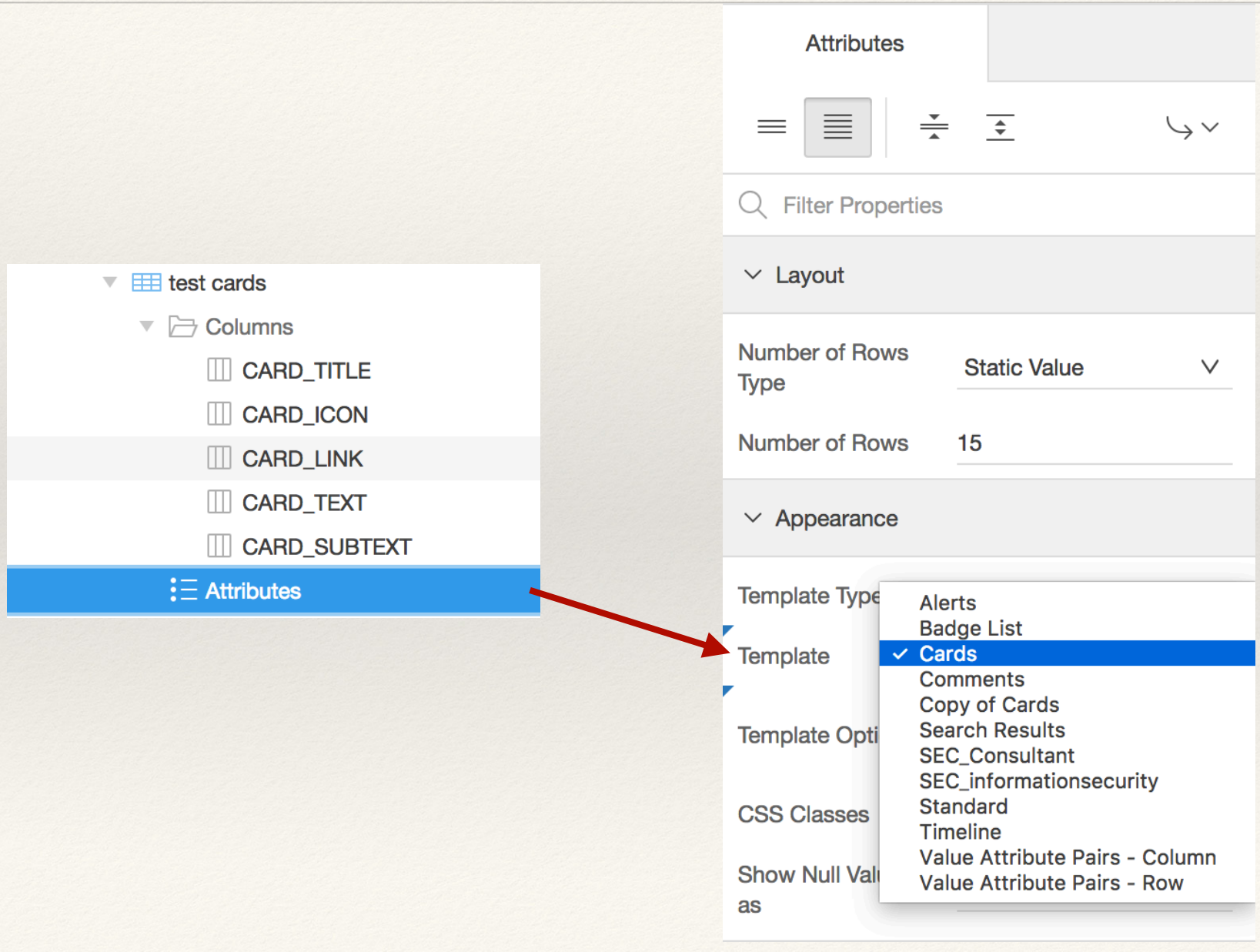
Working with Cards



Working with Cards



Working with Cards



Working with Cards

Information Security Policy

Information Security Policy

Number of TODO's:

Number of bad scores:

Safety consultant

Number of TODO's:

Number of bad scores:

Safety management

Number of TODO's:

Number of bad scores:

Inventory

Number of TODO's:

Number of bad scores:

Access rights

Number of TODO's:

Number of bad scores:

IT-infrastructure

Number of TODO's:

Number of bad scores:

Agenda

Number of TODO's:

Number of bad scores:

Tracking policy

Number of TODO's:

Number of bad scores:

Tests

Number of TODO's:

Number of bad scores:

Incident reports

Number of TODO's:

Number of bad scores:

Audit reports

Number of TODO's:

Number of bad scores:

Making your own template

- Goal: Show each sub-subject as a collapsible and show all content items for each sub-subject in that collapsible region.
  - Tried customization using PL/SQL
  - Failed —> Difficult when no knowledge of PL/SQL
  - Templates instead

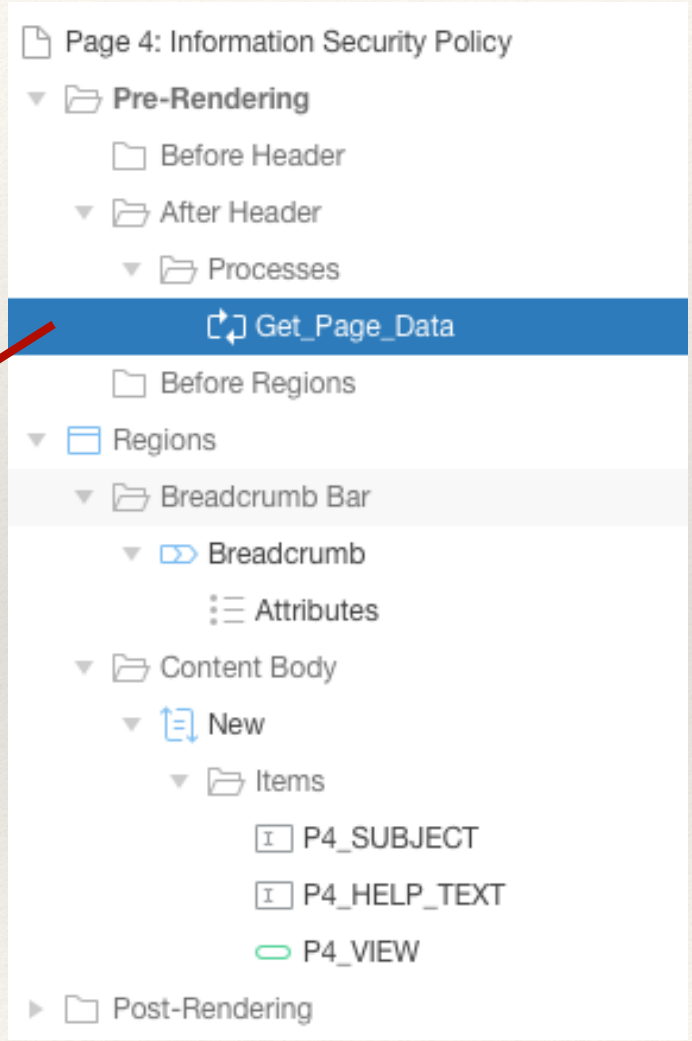
The PL/SQL Way

- Bind to Page Item —> Error
- Cursor loop
- Collapsible region

Bind data to Page Item

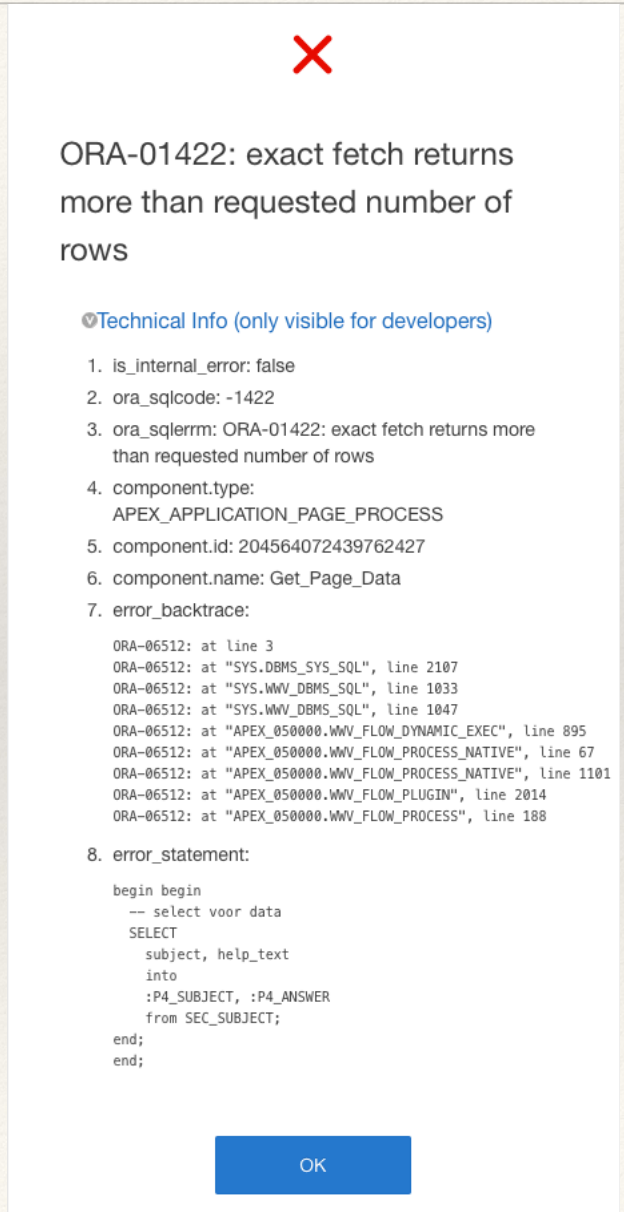
- Create Page Items
- Created a Process
- Put data in the Page Items

```
1  begin
2    -- select voor data
3    SELECT
4      subject, help_text
5      into
6      :P4_SUBJECT, :P4_ANSWER
7      from SEC_SUBJECT;
8  end;
```



Bind data to Page Item

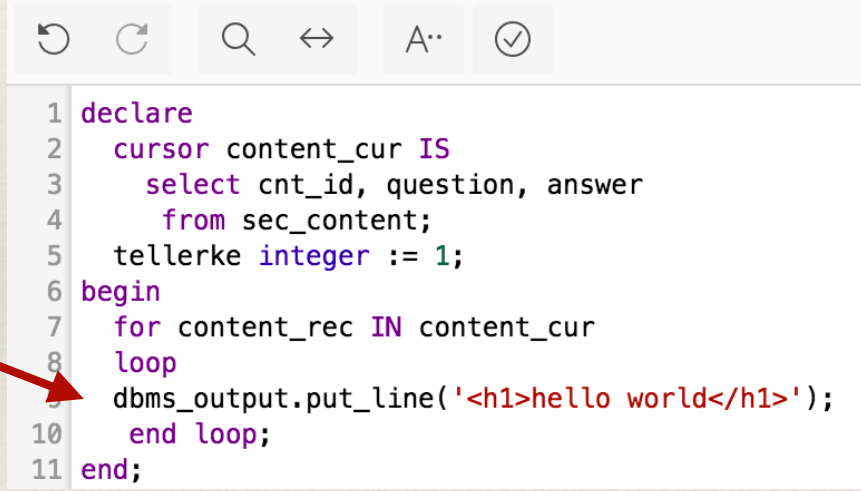
- Logical error
- Can’t bind more than one value to a Page Item
- Better solution?
- Cursor Loops?
- No Page Items, but inline html.



Cursor loops

- No output
- "dbms_output.put_line();

Code Editor - PL/SQL Code



```
1  declare
2    cursor content_cur IS
3      select cnt_id, question, answer
4       from sec_content;
5    tellerke integer := 1;
6  begin
7    for content_rec IN content_cur
8    loop
9    dbms_output.put_line('<h1>hello world</h1>');
10    end loop;
11 end;
```

Cursor loops

- "sys.htp.p();"
- Collapsible fail
- Needed help!

Code Editor - PL/SQL Code

```
1  declare
2    cursor content_cur IS
3      select cnt_id, question, answer
4       from sec_content;
5    tellerke integer := 1;
6  begin
7    for content_rec IN content_cur
8    loop
9  --sys.htp.p('<div class="t-Region t-Region--scrollBody" role="group">');
10 --sys.htp.p('<div class="t-Region-header">');
11 --sys.htp.p('</div>');
12 --sys.htp.p('<div class="t-Region-bodyWrap">');
13 dbms_output.put_line('hello world');
14     sys.htp.p('<div class="content_row">' || V('SESSION'));
15       sys.htp.p('<h3>');
16       sys.htp.p(tellerke || '. ' || content_rec.question);
17       sys.htp.p('</h3>');
18       sys.htp.p('<p>');
19       sys.htp.p(content_rec.answer);
20       sys.htp.p('</p>');
21 --sys.htp.p('</div>');
22     sys.htp.p('</div>');
23     tellerke := tellerke + 1;
24    end loop;
25 end;
```

Mathias' thoughts at this point

- Roeland's advice
- Customizations
- Keep it simple
- Use templates

Watch Jorge's video's on templates

Video: Part 2 – APEX Classic Report Named Column Templates

Posted on July 10, 2016 by  Jorge Rimblas — 4 Comments ↓

I'm happy to bring you installment Number 2 of this video series. If you missed the first one, you can find it here Part 1. We'll call this the "Dynamic Action" edition because that's what most of the video deals …

Read more ›

Posted in APEX, Classic Reports, Video

Video: Part 1- APEX Classic Report Named Column Templates

Posted on June 27, 2016 by  Jorge Rimblas — 11 Comments ↓

As part of my Kscope16 presentation "Hooked on Classic (Reports) Learn tips & techniques to make them sing" (live slides here). I demoed a Classic Report with a custom template (a Named Column template), made to look like a list. …

Read more ›

Posted in APEX, Classic Reports, KScope, Oracle, Video

http://rimblas.com/blog/author/admin/

How create a template?

- Create new "report" template
- Insert your HTML template with Substitution strings
- Use the Row Templates for loops
- Use PL/SQL Conditions to keep track

How create a template?

Row Templates

* Row Template 1

```
<div class="SSTcontent">
<div class="sst_header">
    <div class="sst_header-icons">
        #EVALUATION#
        #TODO#
        #ADD_CNT_ID#
    </div>
    <div class="sst_header-title">
        (SUBSUBJECT:) #SUBSUBJECT# (SST_ID:) #SST_ID# (PREV_SST_ID:) #PREV_SST_ID#
    </div>
</div>

<div class="sst_content-full">  <!-- Why can't I just do this in row template 2? -->
    <div class="sst_content-section">
        <div class="sst_cnt_question">
            (QUESTION:) #QUESTION# <div class="edit_cnt">#EDIT_CNT_ID#</div>
        </div>
        <div class="sst_cnt_answer">
            (ANSWER:) #ANSWER# (SST_ID:) #SST_ID# (PREV_SST:) #PREV_SST_ID#
        </div>
    </div>
    <div class="sst_footer">
        #LASTEVAL# #LASTCHANGED#
    </div>
</div>
```

Row Template 1 Condition: Use Based on PL/SQL Expression

Row Template 1 Expression:

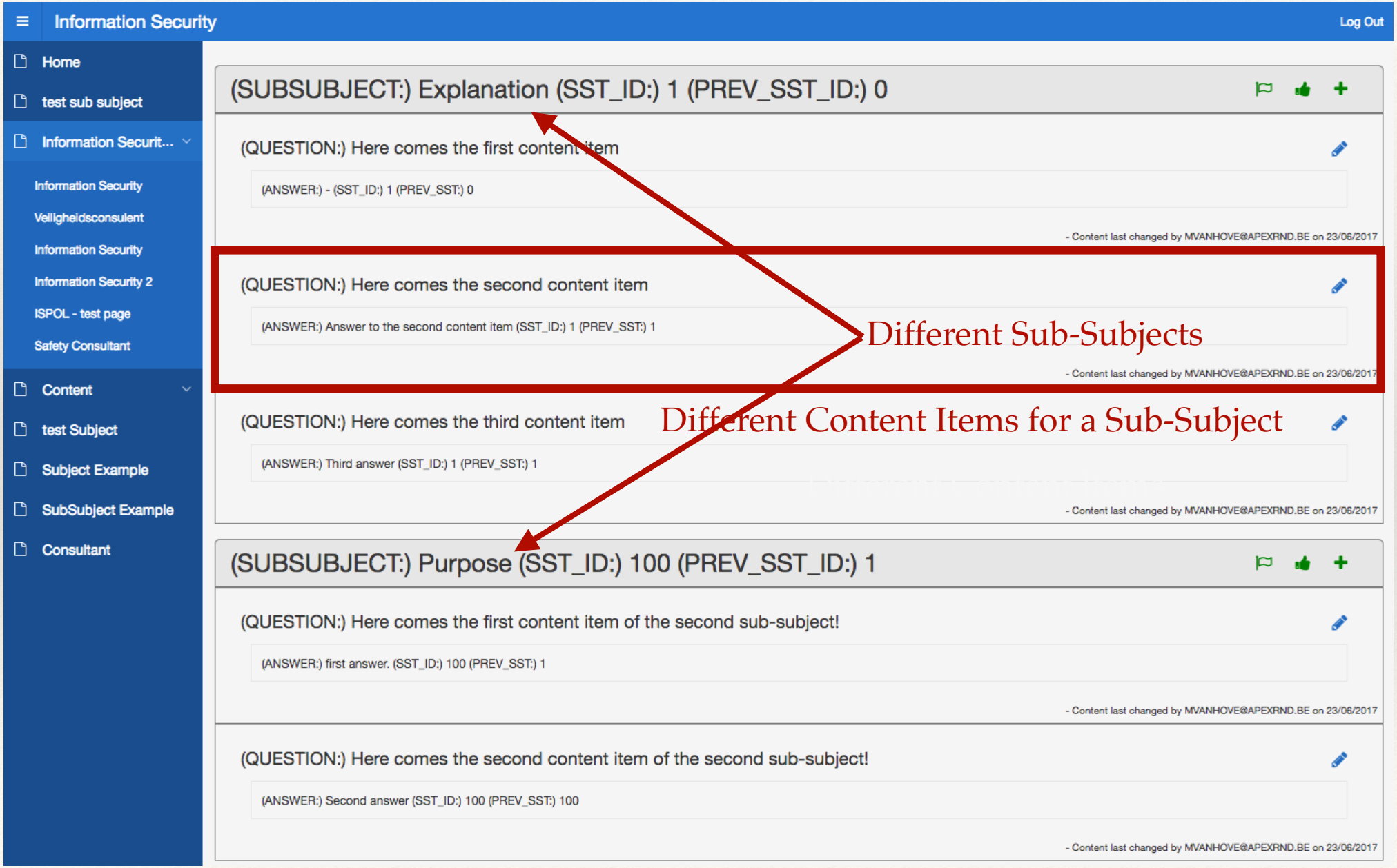
```
('#SST_ID#' <> '#PREV_SST_ID#')
```

Call it from your page

Code Editor - SQL Query

```
1  select cnt.cnt_id as cnt_id
2        , sst.sst_id as sst_id
3        , nvl(lag(sst.sst_id) over (order by sst.sst_id, cnt.question) ,0) as prev_sst_id
4        , cnt.evaluation_id as cev_id
5        , sst.sub_subject as subsubject
6        , '<i class="fa fa-flag' || decode(cnt.evaluation_id, null, '-o' , '') || '"></i>' evaluation
7        , '<i class="fa fa-thumbs-' || decode((select cev.todo
8                  from SEC_content_evaluation cev
9                  where cev.content_id = cnt.cnt_id
10                 and cev.cev_id = cnt.evaluation_id), null, 'up' , 'down') || '"></i>' todo
11       , cnt.cnt_id as add_cnt_id
12       , cnt.question as question
13       , cnt.cnt_id as edit_cnt_id
14       , cnt.answer as answer
15       , (select 'Last evaluation by ' || cev.created_by || ' on ' || cev.created_date || '   -   '
16                 from SEC_content_evaluation cev
17                 where cev.content_id = cnt.cnt_id
18                 and cev.cev_id = cnt.evaluation_id) as lasteval
19       , 'Content last changed by ' || cnt.modified_by || ' on ' || cnt.modified_date as lastchanged
20   from SEC_content cnt, SEC_subsubject sst
21   where cnt.sub_subject_id = sst.sst_id
22   and cnt.subject_id = 1
23   order by sst.sst_id, sst.sub_subject
```

Result


Information Security
Log Out
Home
test sub subject
Information Securit...
Information Security
Veiligheidsconsulent
Information Security
Information Security 2
ISPOL - test page
Safety Consultant
Content
test Subject
Subject Example
SubSubject Example
Consultant
(SUBSUBJECT:) Explanation (SST_ID:) 1 (PREV_SST_ID:) 0
(QUESTION:) Here comes the first content item
(ANSWER:) - (SST_ID:) 1 (PREV_SST:) 0
- Content last changed by MVANHOVE@APEXRND.BE on 23/06/2017
(QUESTION:) Here comes the second content item
(ANSWER:) Answer to the second content item (SST_ID:) 1 (PREV_SST:) 1
- Content last changed by MVANHOVE@APEXRND.BE on 23/06/2017
(QUESTION:) Here comes the third content item
(ANSWER:) Third answer (SST_ID:) 1 (PREV_SST:) 1
- Content last changed by MVANHOVE@APEXRND.BE on 23/06/2017
(SUBSUBJECT:) Purpose (SST_ID:) 100 (PREV_SST_ID:) 1
(QUESTION:) Here comes the first content item of the second sub-subject!
(ANSWER:) first answer. (SST_ID:) 100 (PREV_SST:) 1
- Content last changed by MVANHOVE@APEXRND.BE on 23/06/2017
(QUESTION:) Here comes the second content item of the second sub-subject!
(ANSWER:) Second answer (SST_ID:) 100 (PREV_SST:) 100
- Content last changed by MVANHOVE@APEXRND.BE on 23/06/2017
Different Sub-Subjects
Different Content Items for a Sub-Subject

Make it Collapsible

(SUBSUBJECT:) Explanation (SST_ID:) 1 (PREV_SST_ID:) 0

(SUBSUBJECT:) testerdetest (SST_ID:) 100 (PREV_SST_ID:) 1

(QUESTION:) Nummertwee van de testerdetest lambda calculus blablaa

(ANSWER:) - (SST_ID:) 100 (PREV_SST:) 1

- Content last changed by MVANHOVE@APEXRND.BE on 04/01/2017

(QUESTION:) TESTERDETESTER lambda blabla

(ANSWER:) - (SST_ID:) 100 (PREV_SST:) 100

- Content last changed by MVANHOVE@APEXRND.BE on 10/01/2017

Building your own template

- Template Type
- Right syntax: #BINDVARIABLE# instead of #bindvariable#
- PL/SQL conditions?
- Loops on specific section?

Why these problems?

- Structure/overview was missing
- Lack of knowledge of all the existing APEX elements
- Poor understanding of the meaning of specific APEX terms
- Customize to fast
- No perfect way

How Mathias started



1. Two introduction sessions

APEX R&D research & development

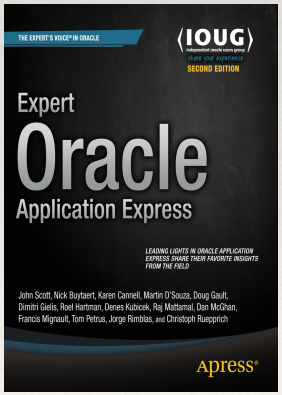
2. APEX R&D's Guide



3. Book by Steven Feuerstein

ORACLE Application Express

4. Online Guide



5. Expert Oracle APEX

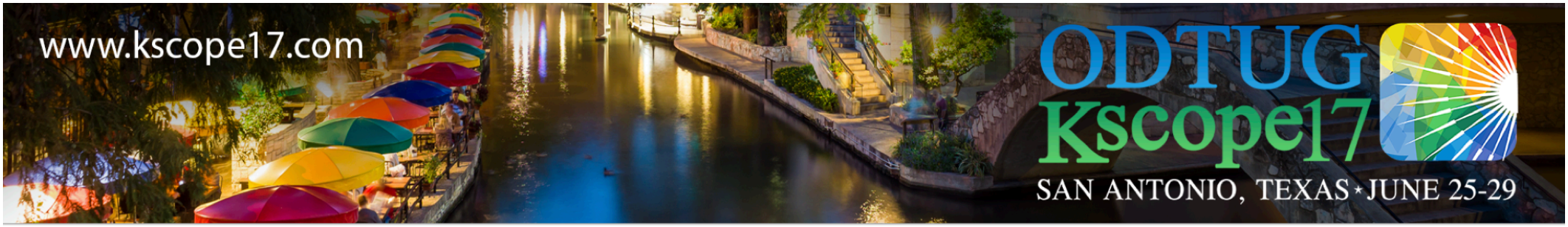
How you should start?!

- Introduction training of APEX - Overview
- Analyze an existing APEX page
- Understand the Core Structure
- APEX R&D introduction course / APEX Education Course (free)
- Learn to master the key elements of the Core Structure
- Read Oracle PL/SQL Programming (only part 1 and 2) by Steven Feuerstein
- QuickSQL and Blueprint
- Start developing something easy using the key elements of APEX. Avoid customizations!



Still a long road until reaching the top. But Mathias' first steps are made.

Now it's your turn!



Join Your Community at Kscope17

Monday, June 26 from 8:00 PM – 10:00 PM in Cibolo Canyon 5

APEX Open Mic Night Sponsored by insum

APEX Open Mic Night is one of the highlights of Kscope for the APEX community. It gives the opportunity for attendees to showcase some of the cool features and applications they've built using APEX. For those that want to present, simply show up a few minutes early and sign-up on the sheet provided. Each informal presentation is five minutes long (no slides) followed by a few minutes of Q&A from the audience.

Q&A

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PLEASE FILL OUT YOUR EVALUATIONS