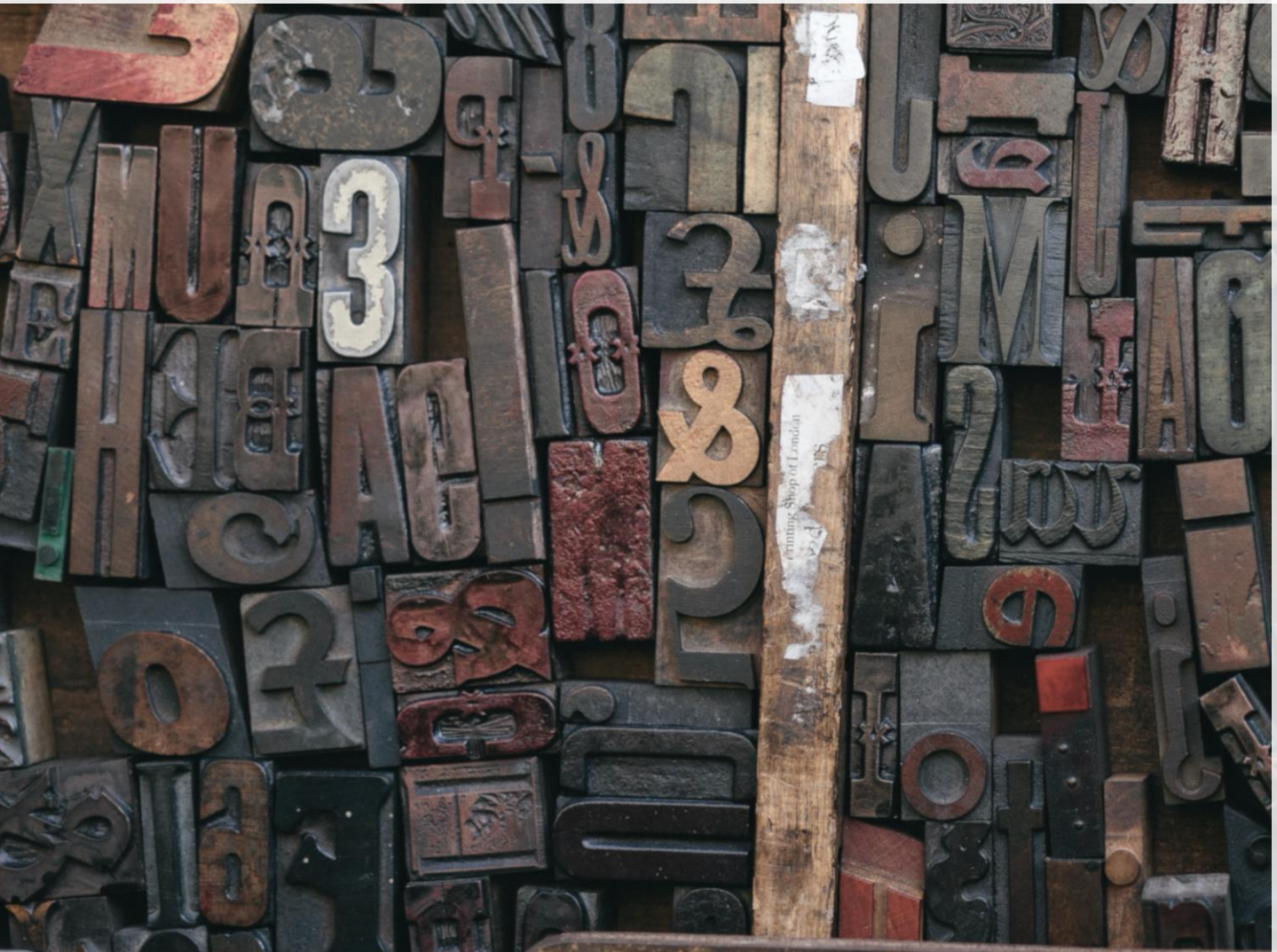
MT AG

enabling the adaptive enterprise



Dokumentengenerierung in APEX

DOAG K+A 2020

Managing Technology AG (MT AG)

Founded
1994

Privately-Owned
Corporation

33 Mio. Euro
Revenue in 2019

>100 Active Clients

Head Office
Ratingen

Branch Offices
Frankfurt am Main
Cologne
Munich

280 Employees
45 APEX Experts

Your partner for digital transformation

Individual IT solutions from a single source

Oracle
Platinum Partner

Microsoft
Gold Partner

Non-Proprietary

Cross-Industry

kununu
TOP COMPANY
www.kununu.com
VON MITARBEITERN EMPFOHLEN!

Top Company for
Trainees &
Students

Philipp Hartenfeller

Since 2016 @ MT AG

APEX / DBs / Web / JavaScript

From Düsseldorf

Blog: https://hartenfeller.dev/blog/

@phartenfeller

Agenda

- APEX Data Export (20.2)
- XLSX-Builder
- JasperReports
- APEX Office Print

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APEX Data Export (20.2)

APEX Data Export

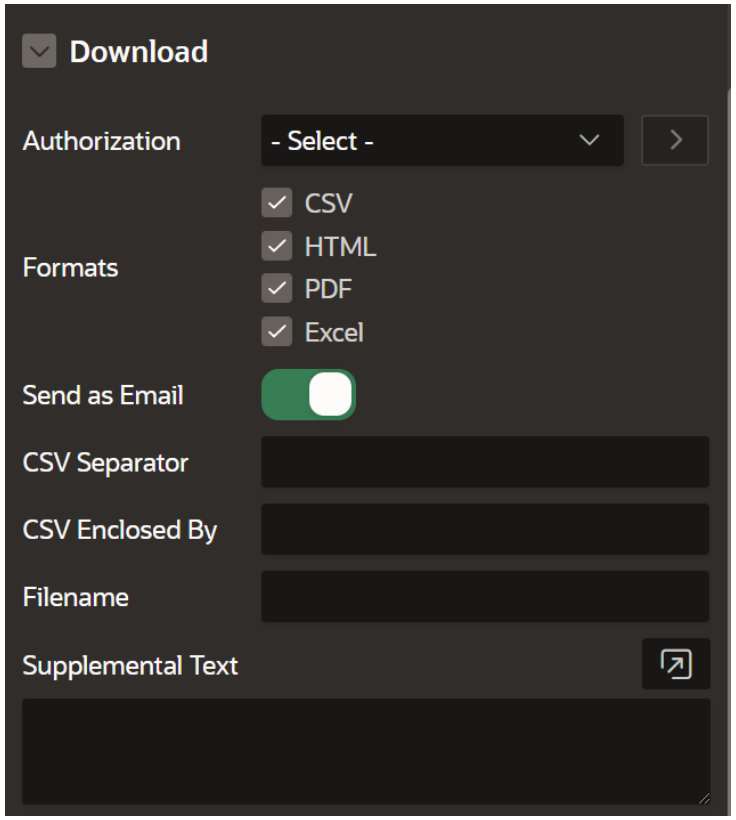
APEX 20.2

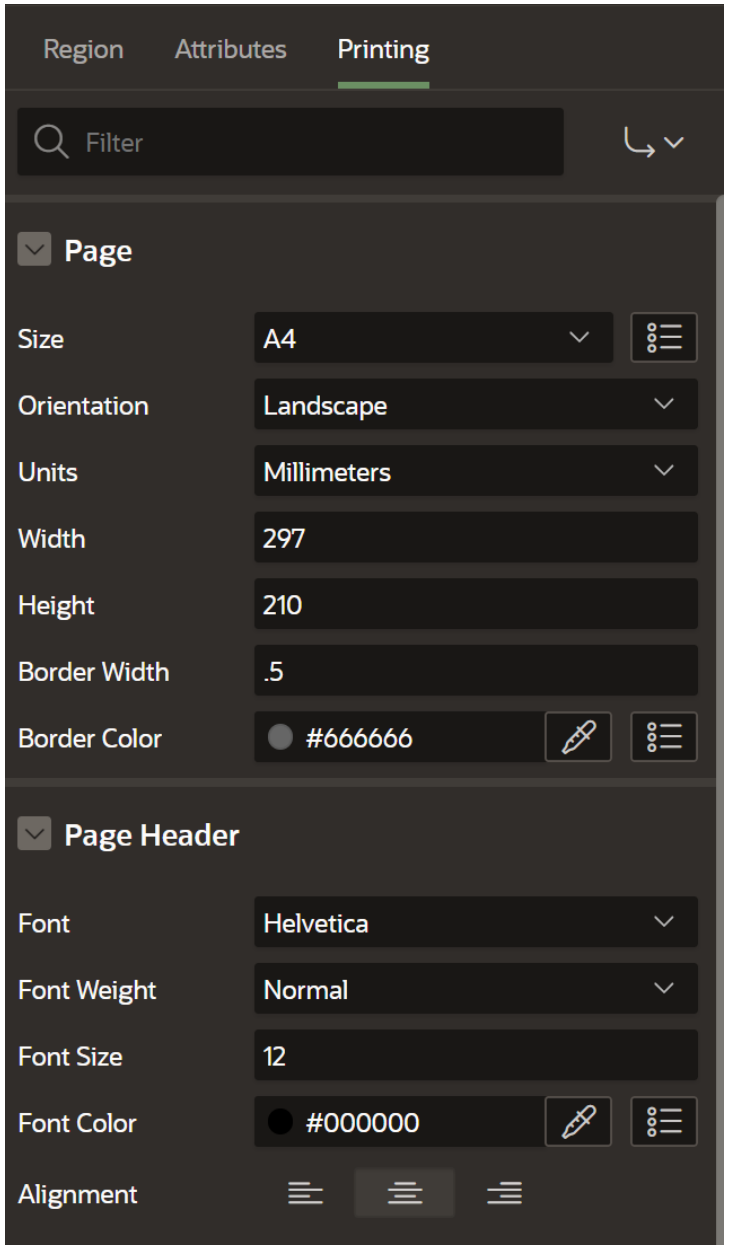
3.1.4 Report Printing

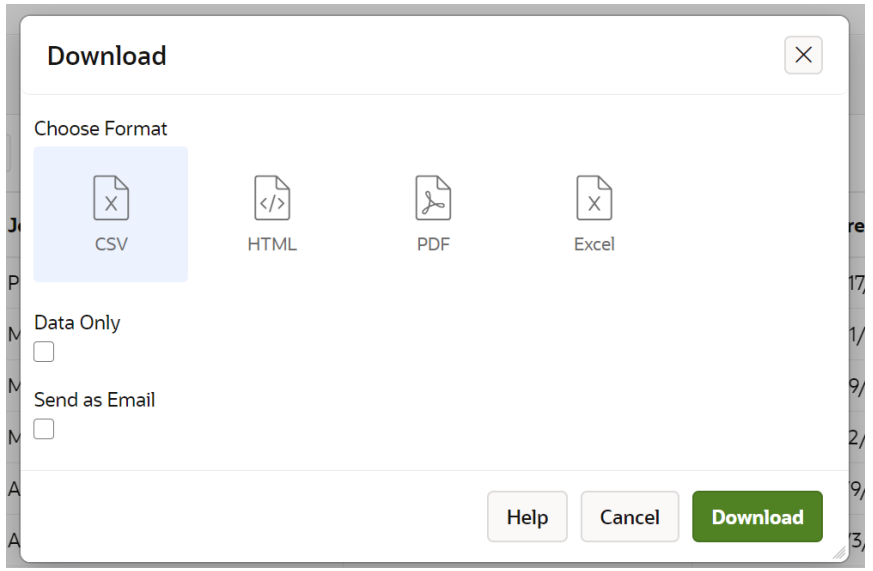
- Built-in PDF printing and Excel download for Interactive Reports, Interactive Grids and Classic Reports. Ensure to enable PDF and Excel as additional download formats in your region attributes. Users can change the page orientation and size in the download dialog.
- Interactive Report - Send E-Mail: All download formats can now be attached.
- Enhanced integration with BI Publisher.
- New `APEX_REGION.EXPORT_DATA` and `APEX_DATA_EXPORT` APIs to programmatically generate PDF, CSV, Excel, HTML, JSON and XML files.
- Built-in PDF now supports Chinese, Japanese and Korean languages.

APEX Data Export

Reports integration







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Programmatic

```
c_format_csv
c_format_html
c_format_pdf
c_format_xlsx
c_format_xml
c_format_pxml
c_format_json
c_format_pjson
```

```plsql
declare
  l_context apex_exec.t_context;
  l_export  apex_data_export.t_export;

  l_highlights   apex_data_export.t_highlights;
  l_print_config apex_data_export.t_print_config;
begin
  l_context := apex_exec.open_query_context(
    p_location    => apex_exec.c_location_local_db
  , p_sql_query   => q'[select * from emp]'
  );

  l_export := apex_data_export.export (
    p_context      => l_context
  , p_format       => apex_data_export.c_format_xlsx
  , p_file_name    => 'employees_' || sys_guid()
  );

  apex_exec.close(l_context);

  apex_data_export.download(
    p_export              => l_export
  );

exception
  when others then
      apex_exec.close(l_context);
      raise;
end;
```

Highlight values

```
  l_highlights apex_data_export.t_highlights;
begin
  apex_data_export.add_highlight(
    p_highlights       => l_highlights
  , p_id               => 1
  , p_value_column     => 'HIGHLIGHT'
  , p_display_column   => 'SAL'
  , p_text_color       => '#FFFF'
  , p_background_color => '#ccff99'
  );

  l_context := apex_exec.open_query_context(
    p_location    => apex_exec.c_location_local_db
  , p_sql_query   =>
  q'[select empno
          , ename
          , job
          , sal
          , case
              when sal < 1000 then 1
              else null
            end as HIGHLIGHT
   from emp]'
  );

  l_export := apex_data_export.export (
    p_context      => l_context
  , p_format       => apex_data_export.c_format_xlsx
  , p_file_name    => 'employees_' || sys_guid()
  , p_highlights   => l_highlights
  );
```

Style data

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```
  l_print_config apex_data_export.t_print_config;
begin
  l_print_config := apex_data_export.get_print_config(
    p_body_font_color         => '#343942'
  , p_body_bg_color           => '#fffbf0'
  , p_page_header             => 'HeaderText'
  , p_page_header_font_weight => apex_data_export.c_font_weight_bold
  , p_page_footer             => 'Footer Text'
  , p_page_footer_font_color  => '#ffbf00'
  , p_page_footer_font_size   => 20
  , p_page_footer_font_weight => apex_data_export.c_font_weight_bold
  , p_page_footer_font_family => apex_data_export.c_font_family_times
  , p_border_width            => 1
  , p_border_color            => '#4B4540'
  );

  /* ......... */

  l_export := apex_data_export.export (
    p_context      => l_context
  , p_format       => apex_data_export.c_format_xlsx
  , p_file_name    => 'employees_' || sys_guid()
  , p_print_config => l_print_config
  );

  apex_data_export.download(
    p_export              => l_export
  , p_content_disposition => 'attachment'
  );
end;
```

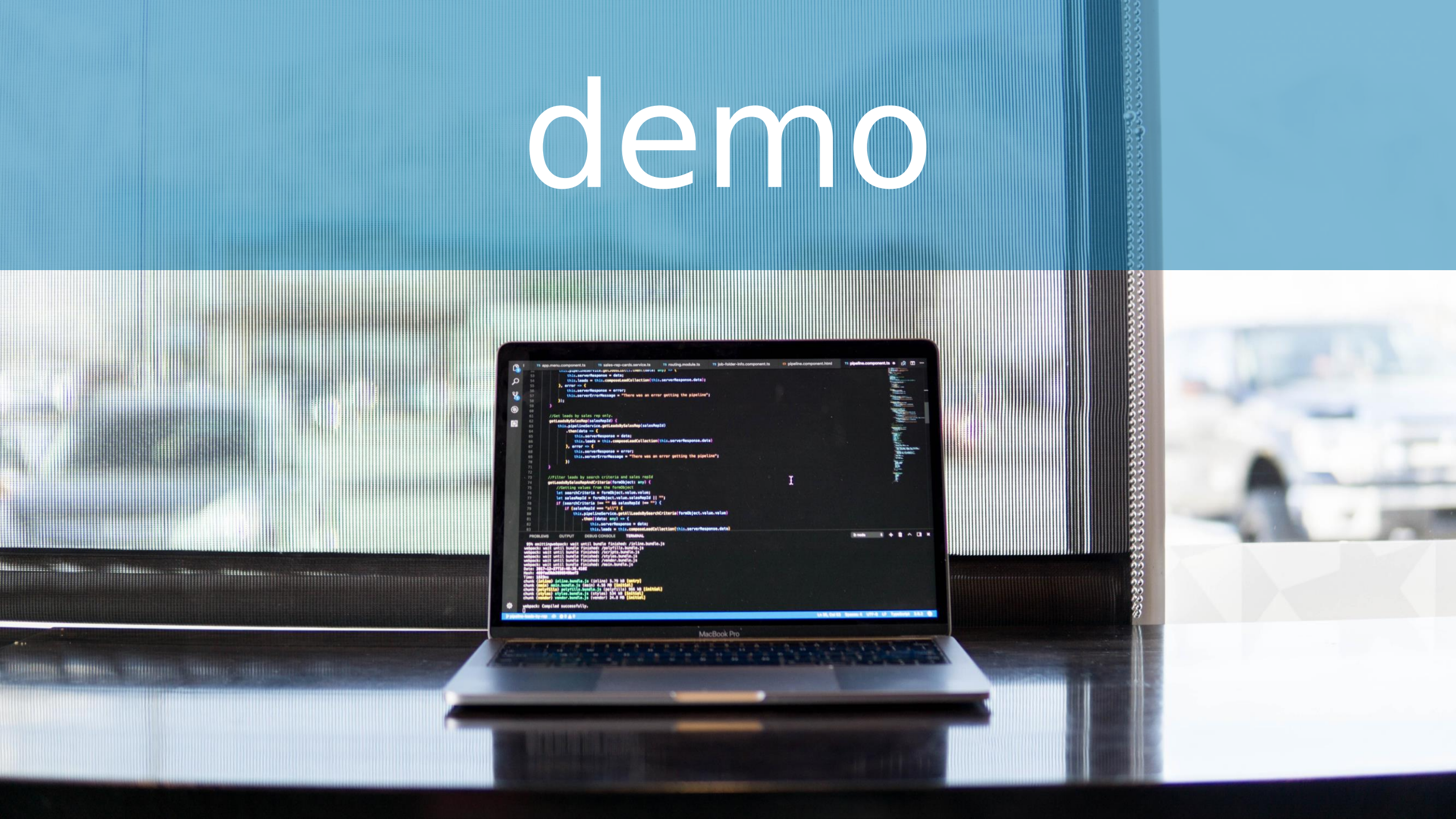
APEX Data Export

Also possible

- Aggregations
- Add custom columns
- Column groups
- Print config (style the export)

Documentation:
https://docs.oracle.com/en/database/oracle/application-express/20.2/aeapi/APEX_DATA_EXPORT.html

demo



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XLSX Builder

XLSX Builder

Details

- Low-level PL/SQL-API to create excel files
- Only consists of two Packages (XLSX_BUILDER and ZIP_UTIL_PKG)
- Open Source
- Developed by Anton Scheffer
  - Fork by Moritz Klein is most advanced:
  - https://github.com/commi235/xlsx_builder

Low-level API

```
declare
  l_sheet_num pls_integer;
  l_blob      blob;
begin
  l_sheet_num := xlsx_builder_pkg.new_sheet('Main Sheet');

  xlsx_builder_pkg.cell(
    p_col       => 1
  , p_row       => 1
  , p_value     => 'Headline'
  , p_sheet     => l_sheet_num_main
  , p_fontid    => xlsx_builder_pkg.get_font(
                     p_name => 'Arial'
                   , p_rgb => 'FA8072')
  , p_fillid    => xlsx_builder_pkg.get_fill('solid', 'e6ffe6')
  );

  xlsx_builder_pkg.set_column_width(
    p_col   => 1
  , p_width => 30
  , p_sheet => l_sheet_num_main
  );

  l_blob := xlsx_builder_pkg.finish;
end;
```

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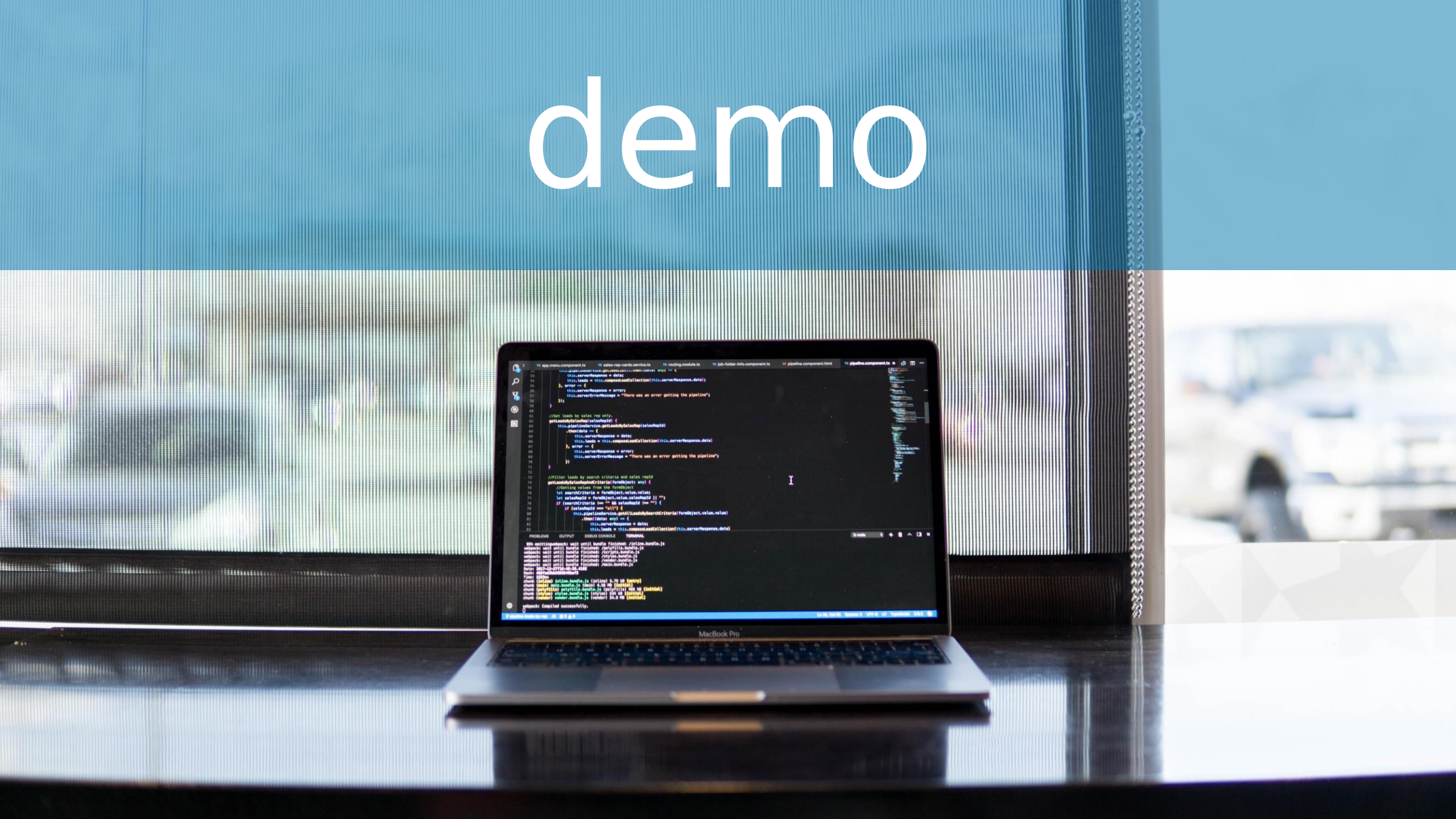
XLSX Builder

Feature-Rich

- Multiple sheets
- Formulas
- Dropdowns
- In-depth cell styling
- Comments
- Merge cells
- Data validations
- Freeze rows
- Hyperlinks
- Hidden sheets

demo



JasperReports

JasperReports

Details

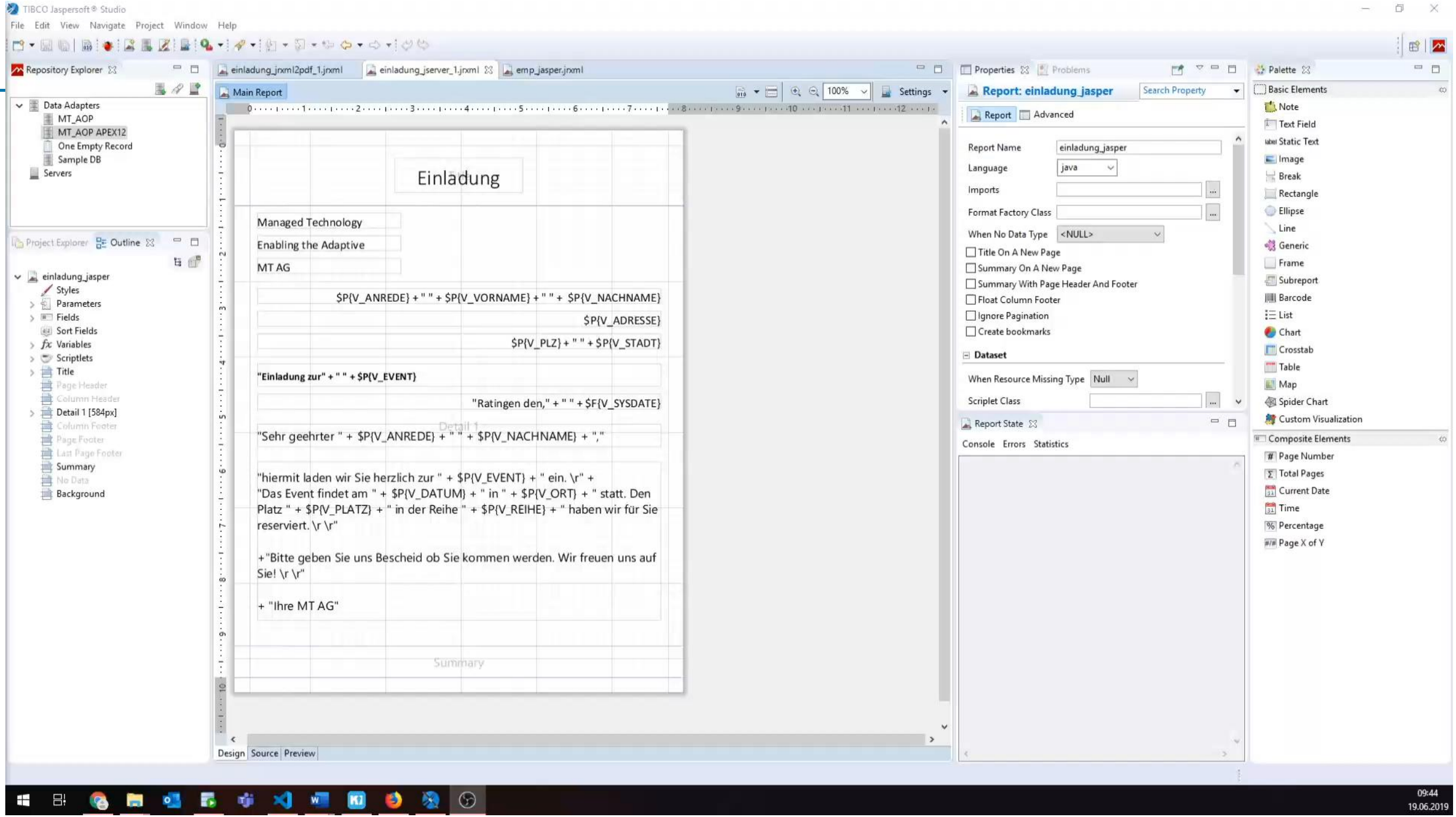
- Bought by TIBCO in 2014
- Based on a Java library
- Server as centralized repository and creates documents on request
  - Callable over webservices (SOAP & REST)
- Free community edition

https://community.jaspersoft.com/community-download

JasperReports

Features

- Template based: special report designer tool to create pixel perfect reports
- DB connection can be used to query data
- Output formats:
  - PDF
  - HTML
  - Office: Word + Excel
  - Other: TXT, RTF, ODT, CSV and XML


TIBCO Jaspersoft® Studio
File Edit View Navigate Project Window Help
Repository Explorer
Data Adapters
MT_AOP
MT_AOP APEX12
One Empty Record
Sample DB
Servers
Project Explorer
Outline
einladung_jasper
Styles
Parameters
Fields
Sort Fields
Variables
Scriptlets
Title
Page Header
Column Header
Detail 1 [584px]
Column Footer
Page Footer
Last Page Footer
Summary
No Data
Background
einladung_jrxml2pdf_1.jrxml
einladung_jserver_1.jrxml
emp_jasper.jrxml
Main Report
100%
Settings
Einladung
Managed Technology
Enabling the Adaptive
MT AG
$P{V_ANREDE} + " " + $P{V_VORNAME} + " " + $P{V_NACHNAME}
$P{V_ADRESSE}
$P{V_PLZ} + " " + $P{V_STADT}
"Einladung zur" + " " + $P{V_EVENT}
"Ratingen den," + " " + $F{V_SYSDATE}
Detail 1
"Sehr geehrter " + $P{V_ANREDE} + " " + $P{V_NACHNAME} + ","
"hiermit laden wir Sie herzlich zur " + $P{V_EVENT} + " ein. \r" +
"Das Event findet am " + $P{V_DATUM} + " in " + $P{V_ORT} + " statt. Den Platz " + $P{V_PLATZ} + " in der Reihe " + $P{V_REIHE} + " haben wir für Sie reserviert. \r \r"
+"Bitte geben Sie uns Bescheid ob Sie kommen werden. Wir freuen uns auf Sie! \r \r"
+ "Ihre MT AG"
Summary
Design Source Preview
Properties
Problems
Report: einladung_jasper
Search Property
Report
Advanced
Report Name
einladung_jasper
Language
java
Imports
Format Factory Class
When No Data Type
<NULL>
Title On A New Page
Summary On A New Page
Summary With Page Header And Footer
Float Column Footer
Ignore Pagination
Create bookmarks
Dataset
When Resource Missing Type
Null
Scriplet Class
Report State
Console Errors Statistics
Palette
Basic Elements
Note
Text Field
Static Text
Image
Break
Rectangle
Ellipse
Line
Generic
Frame
Subreport
Barcode
List
Chart
Crosstab
Table
Map
Spider Chart
Custom Visualization
Composite Elements
Page Number
Total Pages
Current Date
Time
Percentage
Page X of Y
09:44
19.06.2019

PL-jrxml2pdf

- PL/SQL implementation of JasperReports (no server needed)
- Developed by Andreas Weiden
- Not as functional as the Server version
- Only PDF as output supported

! Last update 2016 !

Download: https://sourceforge.net/projects/pljrxml2pdf/

PL/SQL-API

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```
declare
    l_rep_name varchar2(200);
    l_params   pk_jrxml2pdf_repgen.tparamlist;
    l_blob     blob;
begin
    l_rep_name := 'my_report';

    l_params(1).vcname:='v_text';
    l_params(1).vcvalue:= :p1_text;
    l_params(2).vcname:='v_created';
    l_params(2).vcvalue:= sysdate;
    l_params(3).vcname:='v_user';
    l_params(3).vcvalue:= :APP_USER;

    l_blob := pk_jrxml2pdf_repgen.fk_run(
      i_vcname  => l_rep_name
    , i_lparams => l_params
    );

    pk_jrxml2pdf_repgen.pr_show_report(l_blob);
    apex_application.stop_apex_engine;
end;
```

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APEX Office Print

APEX Office Print

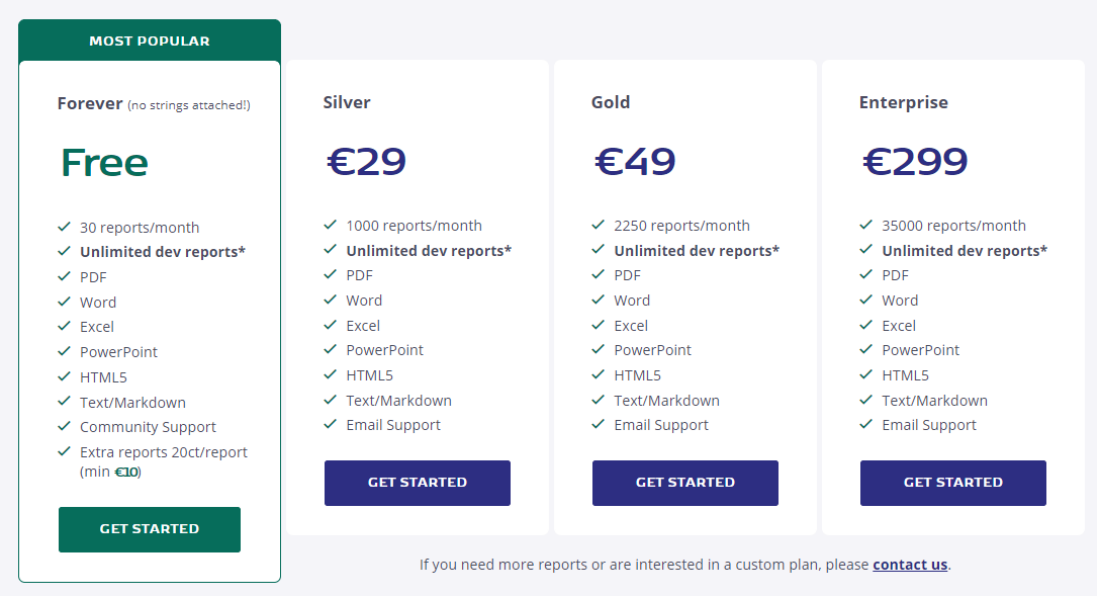
Details

- Developed by United Codes (formerly APEX R&D)
- Focused on easy-to-use APEX integration
- Templates created in office programs
- Server fills templates with data
- Integration over APEX Plug-Ins or PL/SQL API (also REST-API and Python SDK)
- Output formats
  - PDF
  - Office: Word, Excel, PowerPoint
  - Markdown, HTML
  - CSV, TXT, RTF

APEX Office Print

Pricing

Cloud



MOST POPULAR

Forever (no strings attached!)

Free

- 30 reports/month
- **Unlimited dev reports***
- PDF
- Word
- Excel
- PowerPoint
- HTML5
- Text/Markdown
- Community Support
- Extra reports 20ct/report (min €10)

GET STARTED

Silver

€29

- 1000 reports/month
- **Unlimited dev reports***
- PDF
- Word
- Excel
- PowerPoint
- HTML5
- Text/Markdown
- Email Support

GET STARTED

Gold

€49

- 2250 reports/month
- **Unlimited dev reports***
- PDF
- Word
- Excel
- PowerPoint
- HTML5
- Text/Markdown
- Email Support

GET STARTED

Enterprise

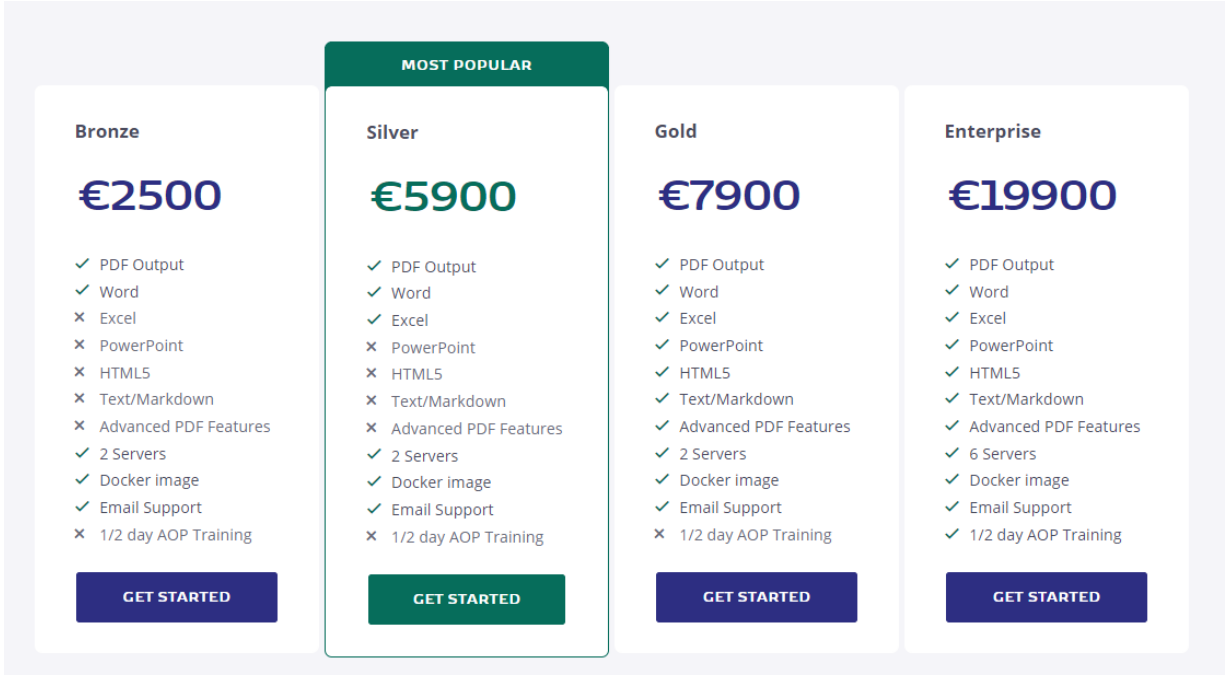
€299

- 35000 reports/month
- **Unlimited dev reports***
- PDF
- Word
- Excel
- PowerPoint
- HTML5
- Text/Markdown
- Email Support

GET STARTED

If you need more reports or are interested in a custom plan, please **contact us**.

On-Premises



Bronze

€2500

- ✓ PDF Output
- ✓ Word
- ✗ Excel
- ✗ PowerPoint
- ✗ HTML5
- ✗ Text/Markdown
- ✗ Advanced PDF Features
- ✓ 2 Servers
- ✓ Docker image
- ✓ Email Support
- ✗ 1/2 day AOP Training

GET STARTED

MOST POPULAR

Silver

€5900

- ✓ PDF Output
- ✓ Word
- ✓ Excel
- ✗ PowerPoint
- ✗ HTML5
- ✗ Text/Markdown
- ✗ Advanced PDF Features
- ✓ 2 Servers
- ✓ Docker image
- ✓ Email Support
- ✗ 1/2 day AOP Training

GET STARTED

Gold

€7900

- ✓ PDF Output
- ✓ Word
- ✓ Excel
- ✓ PowerPoint
- ✓ HTML5
- ✓ Text/Markdown
- ✓ Advanced PDF Features
- ✓ 2 Servers
- ✓ Docker image
- ✓ Email Support
- ✗ 1/2 day AOP Training

GET STARTED

Enterprise

€19900

- ✓ PDF Output
- ✓ Word
- ✓ Excel
- ✓ PowerPoint
- ✓ HTML5
- ✓ Text/Markdown
- ✓ Advanced PDF Features
- ✓ 6 Servers
- ✓ Docker image
- ✓ Email Support
- ✓ 1/2 day AOP Training

GET STARTED

Templates

Template		
Wert: **{dummy}** Datum: **{gen_date}**		

APEX Office Print

Templates

Template	Abfrage	
Wert: **{dummy}** Datum: **{gen_date}**	... select dummy as "**dummy**" , sysdate as "**gen_date**" from dual ...	

APEX Office Print

Templates

Template	Abfrage	Resultat
Wert: **{dummy}** Datum: **{gen_date}**	... select dummy as "**dummy**" , sysdate as "**gen_date**" from dual ...	Wert: **X** Datum: **18.11.2020**

APEX Office Print

Templates

Template		
Employees: **{#emp}{empno}** : **{name}{/emp}**		

APEX Office Print

Templates

Template	Abfrage	
Employees: **{#emp}{empno}** : **{name}{/emp}**	... cursor(select empno as "empno", name as "name" from emp_v) as "emp” ...	

APEX Office Print

Templates

Template	Abfrage	Resultat
Employees: **{#emp}{empno}** : **{name}{/emp}**	... cursor(select empno as "empno", name as "name" from emp_v) as "emp” ...	Employees: 7782 : CLARK 7934 : MILLER 7849 : KING 7902 : FORD ...

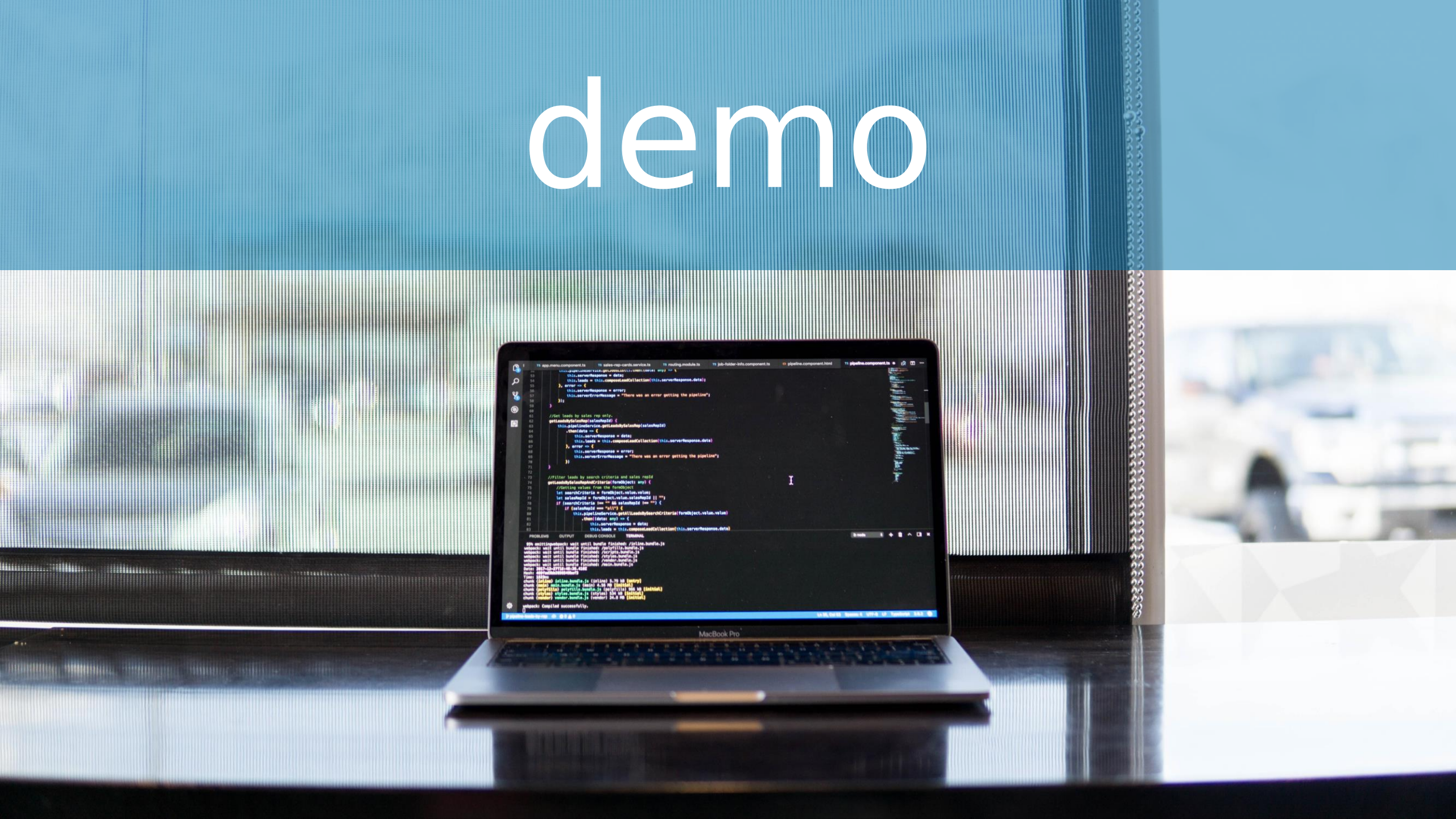
APEX Office Print

Feature-Rich

- Charts
- Angular expressions
- Barcodes
- Subreports
- Excel formulas
- Images
- Watermarks

- Screenshots of APEX contents
- Many PDF features

demo



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Conclusion

Conclusion

	APEX Data Export	XLSX-Builder	JasperReports	jrxml2pdf	AOP
Cost	Free	Free + OpenSource	Community Edition Free	Free + OpenSource	On-Prem:2500-19900€* Cloud: Free-299€** (*1 time + maintenance) (**monthly)
API	APEX-Integration and PL/SQL	PL/SQL	REST / SOAP	PL/SQL	APEX-Integration, PL/SQL, REST, Python
Installation	Comes with APEX 20.2	PL/SQL-PKG	Server	PL/SQL-PKGs + Tables	Server (On-Prem), APEX-Plugins, PL/SQL-PKG
Templates	/	/	jrxml Files	jrxml Files	Office Files
Outputs	XSLX, PDF, HTML, CSV, XML, JSON	XLSX	PDF, HTML, Word, Excel, TXT, RTF, ODT, CSV, XML	PDF	PDF, Office, HTML, Markdown, TXT, CSV, RTF

MT AG

Unsere Vorträge auf der **DOAG 2020**

Hochsensible Personen in Software-Projekten? Klar doch!

Carsten Firus, Berater
Cloud Mobile Development,
Dienstag, 14:00-14:45 Uhr

Revisionssichere Migration Teil I und II

Ernst Leber, Principal DB-Suport
und Nils-Christian Hinck,
Dienstag, 16:00-17:45 Uhr

Dokumentengenerierung in APEX

Philipp Hartenfeller, Berater
APEX Development
Mittwoch, 10:00-10:45 Uhr

Next Level Testing: Authentische Daten für erfolgreiche Tests!

Kai Donato, Senior Berater
APEX Development
Mittwoch, 12:00-12:45 Uhr

DevOps & DB Bad Practices

Oliver Lemm, Fachbereichsleiter
APEX Development II
Donnerstag,12:00-12:45 Uhr

Flows for APEX

Niels de Bruijn, Business Unit Manager
Low-Code APEX Development
Donnerstag, 15:00-15:45 Uhr