

Print and Export data in the format you want with AOP

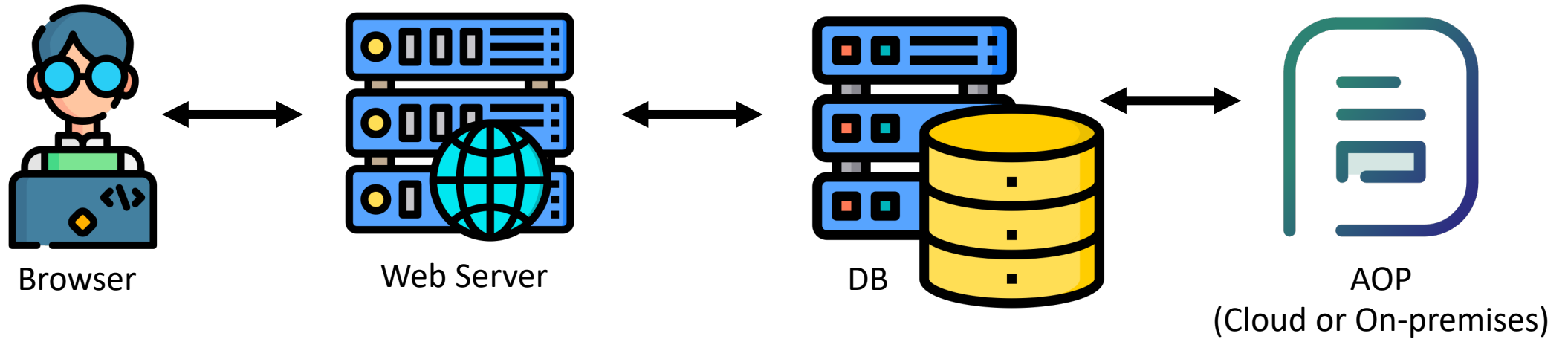
Dimitri Gielis - dgielis@united-codes.com

Dimitri

- CEO and Founder of United Codes
- Oracle ACE Director
- APEX Developer of the year 2009 by Oracle Magazine
- Oracle Developer Choice award (ORDS) in 2015
- Author Expert Oracle APEX
- Twitter: @dgielis
- Email: dgielis@united-codes.com
- Blog: dgielis.blogspot.com

AOP Demo

Architecture



REST API

- At its core AOP is a RESTful service
- Receives JSON in a specific format containing all the data necessary to generate your document
- Simplest way to interact with the server
- Can be used from any technology

```
{
  "version": "19.1.5",
  "mode": "development",
  "aop_url": "http://localhost:8010/",
  "aop_remote_debug": "Local",
  "apex_version": "18.2.0.00.12",
  "logging": {
    "template_filename": "aop_simple_letter.docx",
    "output_filename": "output.docx",
    "user": "ADMIN",
    "session": "13076940850550",
    "app_id": "101"
  },
  "template": {
    "file": "....",
    "template_type": "docx"
  },
  "output": {
    "output_encoding": "raw",
    "output_type": "docx"
  },
  "files": [
    {
      "filename": "file1",
      "data": [
        {
          "cust_first_name": "John",
          "cust_last_name": "Dulles",
          "cust_city": "Sterling"
        }
      ]
    }
  ],
  "prepend_files": [],
  "append_files": [],
  "templates": []
}
```

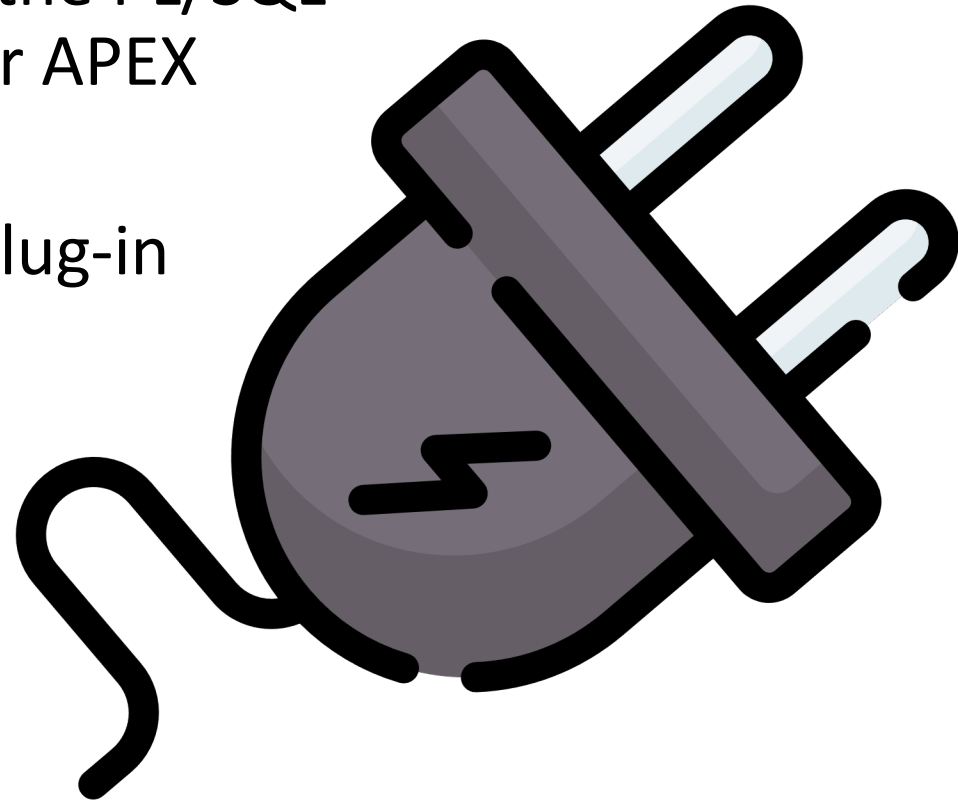
PL/SQL API

- Wrapper around the REST API
- Generates JSON
- Performs the REST call

```
AOP_API_PKG  
AOP_CONVERT_PKG  
AOP_ERROR_PKG  
AOP_LOG_PKG  
AOP_PLSQL_PKG  
AOP_SAMPLE_PKG  
AOP_SETTINGS_PKG  
AOP_TEST_PKG  
AOP_USER_TEST_PKG
```

APEX Plug-in

- Wrapper around the PL/SQL API specifically for APEX developers
- Dynamic action plug-in
- Process plug-in
- Easy!



3 Simple Steps to Get Started



Create a template



Select the data



Choose your output

Templates

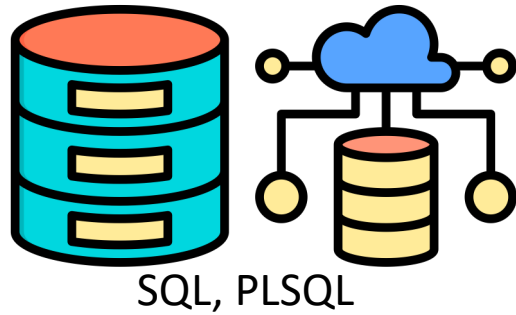


HTML

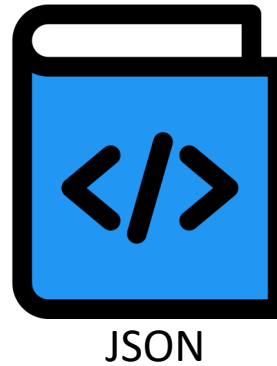


Data Sources

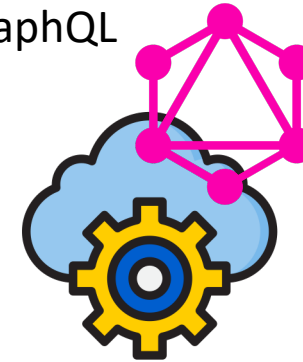
Local or Remote Databases



Web Sources



REST Webservices
GraphQL



APEX Regions



Classic Reports
Interactive Reports
Interactive Grids
Charts
Faceted Search
Calendars ...

Output



- Browser
- Procedure (save to db/email)
- Browser & Procedure
- Inline region
- Directory (AOP Server or DB)
- Cloud (Amazon S3, Dropbox, Google Drive, etc)

Data, Templates & Tags



united codes
APEX Office Print

Name: {cust_first_name} {cust_last_name}

Location: {cust_city}

{#orders}{order_name}, Total: \${order_total}

Item	Quantity	Price
{#product}{product_name}	{quantity}	\${unit_price}/{/product}

{/orders}

```
1 select
2   'file1' as "filename",
3   cursor(
4     select
5       c.cust_first_name as "cust_first_name",
6       c.cust_last_name as "cust_last_name",
7       c.cust_city      as "cust_city",
8       cursor(
9         select o.order_total      as "order_total",
10              'Order ' || rownum as "order_name",
11              cursor(
12                select p.product_name as "product_name",
13                      i.quantity      as "quantity",
14                      i.unit_price    as "unit_price"
15                from demo_order_items i
16                     , demo_product_info p
17                where o.order_id = i.order_id
18                      and i.product_id = p.product_id
19              ) "product"
20            from demo_orders o
21            where c.customer_id = o.customer_id
22          ) "orders"
23      from demo_customers c
24      where customer_id = 1
25    ) as "data"
26  from dual
```

Data, Templates & Tags



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united codes
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Data, Templates & Tags

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Data, Templates & Tags



united codes
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Data, Templates & Tags



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26  from dual
```

Output

Name: John Dulles

Location: Sterling

Order 1, Total: \$2380

Item	Quantity	Price
Skirt	3	\$80
Ladies Shoes	2	\$120
Belt	2	\$30
Bag	4	\$125
Mens Shoes	2	\$110
Wallet	2	\$50
Business Shirt	3	\$50
Trousers	3	\$80
Jacket	3	\$150
Blouse	3	\$60

Output

Name: John Dulles

Location: Sterling

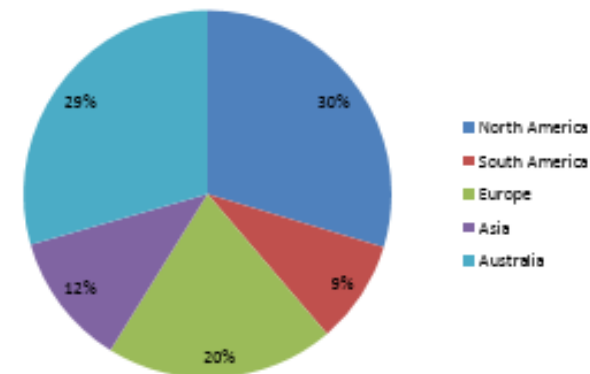
Order 1, Total: \$2380

Item	Quantity	Price
Skirt	3	\$80
Ladies Shoes	2	\$120
Belt	2	\$30
Bag	4	\$125
Mens Shoes	2	\$110
Wallet	2	\$50
Business Shirt	3	\$50
Trousers	3	\$80
Jacket	3	\$150
Blouse	3	\$60

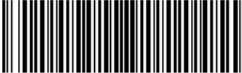
Tag	Word	Excel	PowerPoint	HTML	Markdown	Txt	CSV
{data_string}	Yes	Yes	Yes	Yes	Yes	Yes	Yes
{data_string_with_cell_markup\$}	Yes	Yes	No	No	No	N.A	N.A
{-labels}	Yes	N.A	N.A	N.A	N.A	N.A	N.A
{_htmlcontent}	Yes	No	No	Yes (by default)	Yes (by default)	N.A	N.A
{!slide_loop}	N.A	N.A	Yes	N.A	N.A	N.A	N.A
{!excelshsht_loop}	N.A	Yes	N.A	N.A	N.A	N.A	N.A
{#data_loop} ... {/data_loop}	Yes	Yes	Yes	Yes	Yes	Yes	Yes
{:inline_data_loop} ... {/inline_data_loop}	No	No	No	No	No	No	Yes
{:data_loop_horizontal} ... {/data_loop_horizontal}	Yes	Yes	No	No	No	No	No
{=table_row_loop} ... {/table_row_loop}	N.A	N.A	Yes	N.A	N.A	N.A	N.A
{%imageKey}	Yes	Yes	Yes	Yes	Yes	N.A	N.A
{ barcode}	Yes	Yes	Yes	Yes	Yes	N.A	N.A
{ qrcode}	Yes	Yes	Yes	Yes	Yes	N.A	N.A
{\$chart}	Yes	Yes	Yes	No	No	N.A	N.A
{&interactive_report}	Yes	Yes	No	No	No	N.A	N.A
{&interactive_grid&}	Yes	Yes	No	No	No	N.A	N.A
{<rightToLeft}	Yes	Not Necessary	Not Necessary	Not Necessary	Not Necessary	N.A	N.A
{+footnote}	Yes	No	No	No	No	N.A	N.A
{*hyperlink}	Yes	Yes	Yes	Not Necessary	Not Necessary	N.A	N.A
{~}	Yes	N.A	N.A	N.A	N.A	N.A	N.A



Different Template Tags



Category	Sales (in number of USD)
Motor vehicle & parts dealers	12,344
Urban constructions	38,659
Real estate renting	34,345
Agricultural activities	49,436
Transport services	12,133

Date: 11 August 2012		BILL OF LADING		Page: 1	
SHIP FROM					
Name: Pear Co.				Bill of Lading Number: 0000000000045812	
Address: Naamsestraat 689				 (402) 0000000000045812	
City/State/Zip: Leuven, Leuven, 3000					
SID#:		FOB: ☐			
SHIP TO					
Name: Huli		Location #:		CARRIER NAME:	
Address: Mandraki 21				Trailer number:	
City/State/Zip: Rodos, Rodos, 85100				Seal number(s):	
CID#:		FOB: ☐		SCAC:	
THIRD PARTY FREIGHT CHARGES BILL TO:				Pro number: Pronumbertest	
Name: Pear Co.				 (9012K) Pronumbertest	
Address: Naamsestraat 689					
City/State/Zip: Leuven, Leuven, 3000					
SPECIAL INSTRUCTIONS:				Freight Charge Terms: <i>(freight charges are prepaid unless marked otherwise)</i>	
				Pre-paid: ☒ Collect: ☐ 3rd Party: ☐ ☐ (check box) Master Bill of Lading: with attached underlying Bills of Lading	
CUSTOMER ORDER INFORMATION					
CUSTOMER ORDER NUMBER	# PKGS	WEIGHT	PALLET/SLIP (CIRCLE ONE)		ADDITIONAL SHIPPER INFO
1	2	20kg	Y		Only shipping on Monday. Only shipping on Tuesday.
2	4	15kg	Y		
GRAND TOTAL	0	7			
CARRIER INFORMATION					
HANDLING	PACKAGE	COMMODITY DESCRIPTION		LTL ONLY	

PEAR CO.
11 August 2012

PACKING SLIP

Ship To		
Recipient	John Pear Co.	Order Date 11 August 2012
Address	Naamsestraat 689 Leuven, 3000, Belgium	Order Number 7
Phone	+3212345678	Purchase Order 45
Customer ID#	987654321	

Item #	Description	Unit Type	Order Quantity	Ship Quantity	Backorder Quantity
1	Umbrella	Type 1	2	2	10
2	Bag	Type 2	6	5	4
3	Trousers	Type 3	2	2	8
4	Shirt	Type 4	5	4	9

Comments: Backordered items will ship as they become available. Please contact the Customer Service department at [Phone] with any questions or concerns.

APEXOfficePrint

Printed on 12/08/2016



First Name: Bob	Client ID: 7862786279
Last Name: Johnson	Telephone: +328456386978

Order Name: Order 2, Order Total: 2380

Product Name	Quantity	Unit Price
Business Shirt	3	50
Trousers	3	80
Jacket	3	150
Blouse	3	60
Skirt	3	80
Ladies Shoes	2	120
Belt	2	30
Bag	4	125
Mens Shoes	2	110
Wallet	2	50



www.apexofficeprint.com

APEX R&D bvba
Groeneweg 38
3001 HEVERLEE
Belgium
VAT Number BE0846210281



0000 0000
00000000 00
0000000000 0000
000000
0000 0000000000

Estimate # AOP0002828
Estimate Date 16-JUL-2019
Estimate Total (EUR) 980.00

Item	Description	Unit cost	Quantity	Line total
	APEX Office Print - On Premise Gold Maintenance & Support Renewal 15-AUG-2019 through 14-AUG-2020	980.00	1	980.00
Subtotal				980.00
VAT				0.00
Estimate Total (EUR)				980.00

Reverse charge. Article 44 EU VAT Directive 2006/112/EC

Payments within 30 days. Terms of conditions: <https://www.apexrnd.be>

Bank: IBAN BE39 0016 7169 9919 - BIC GEBABEBB



Transfer Consulting BV
Stationsweg 19
4141 HB Leerdam
T 0345 - 616888
F 0345 - 616300
E info@transfer-solutions.com
www.transfer-solutions.com

TestMartijn
T.a.v. Crediteurenadministratie
Dorpstraat 1
4141HB LEERDAM

Proef

FACTUUR

Factuurdatum: 12-06-2019
Factuurnummer: 84122 (intern)
Contractnummer: C19057-V
Contactpersoon: Dhr. Martijn

Maandelijkse kosten conform opdracht C19057-V (mei 2019)

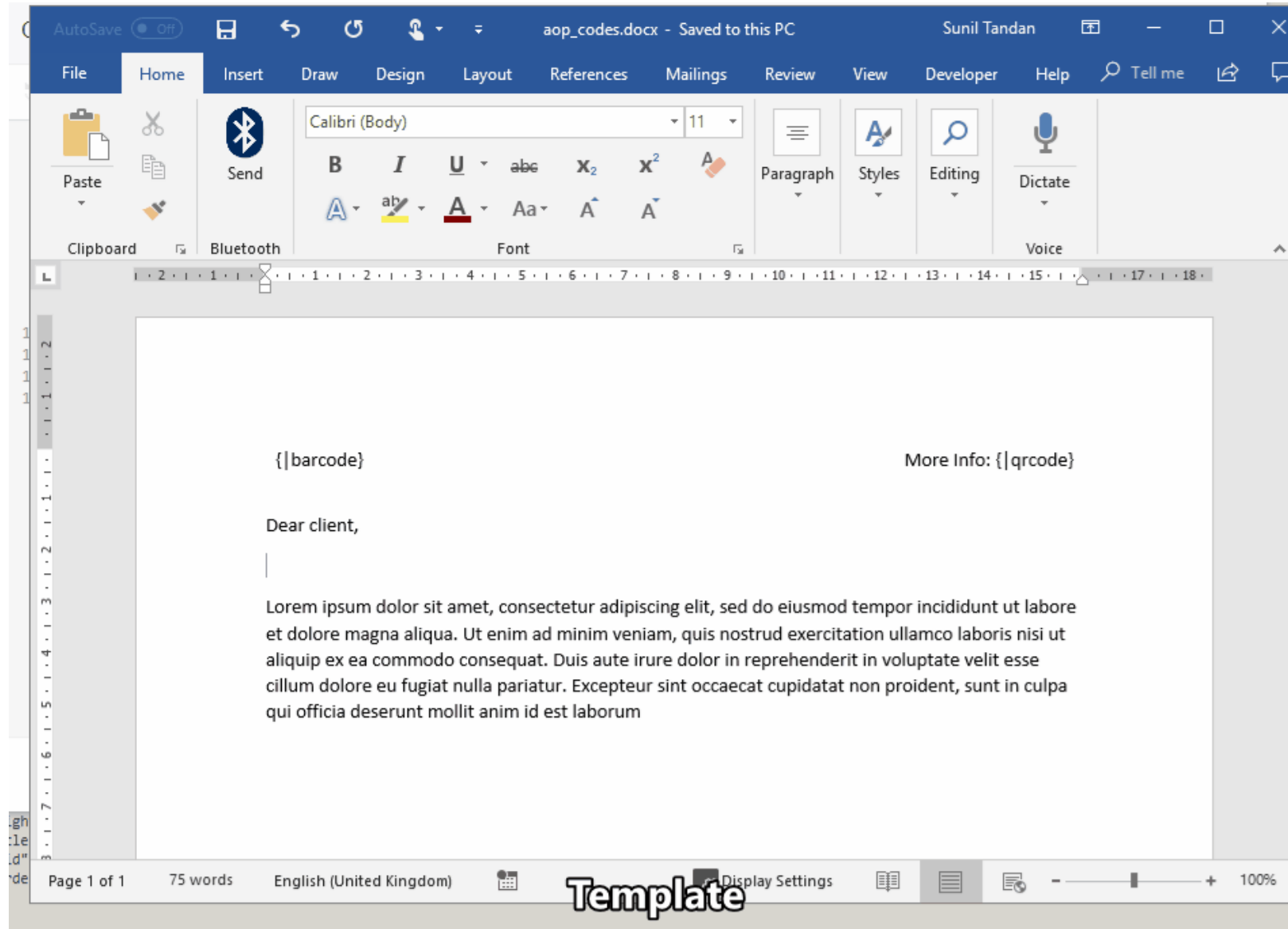
Kosten voor gebruik van product/dienst AM	€ 600,00
	€ 600,00
BTW 21%	€ 126,00
Totaal	€ 726,00

FEDERAL EMERGENCY MANAGEMENT AGENCY				
SITE SHEET				
SITE NUMBER		PW REF NO.		
{#h}{site}		{grant}		
APPLICANT			LAT.	
{applicant}			{lat}	
SITE COST				
Cost Description (Source of Cost Estimate)				
ITEM	CODE	NARRATIVE	QTY	UNIT
{#g}{#det}{det3}	{det4}	{det5}	{det6}	{det7}
			Estimated Site Total	
406 HAZARD MITIGATION PROPOSAL (SITE LEVEL)				
406 Hazard Mitigation Proposal Cost Description (Source of Cost Estimate)				
ITEM	CODE	NARRATIVE	QTY	UNIT
{#hmp}{hmp3}	{hmp4}	{hmp5}	{hmp6}	{hmp7}
			Proposed 406 HMP Site Total	
			Estimated Site Total (If 406 HMP Approved)	
Certified By:			Title:	Date:
I certify that the above information was transcribed from daily logs, vendor invoices, or other document which are available for audit.				

[illegible][illegible]

0000	0000	EQUIPMENT
0000	0000	MATERIAL
0000	0000	CONTRACT EQUIPMENT
0000	0000	CONTRACT COPIES
0000	0000	DIRECT ADMINISTRATIVE COSTS (SUBAWARDS)
0000	0000	Deduct Cal-B (00000) Per 100, See 000-0000
0000	0000	Deduct Cal-B (00000) Per 100, See 000-0000
0010	0000	Deduct Cal-B (00000) Per 100, See 000-0000
0010	0000	WORK TO BE COMPLETED
0010	0000	Paving based on contractor bid
400 HAZARD MITIGATION PROPOSAL (S)		
400 Hazard Mitigation Proposal Cost Description (Source of Cost Estimate)		
0000	0000	0000-0000
Estimate		
0000	0000	WORK COMPLETED
0000	0000	LABOR
0000	0000	EQUIPMENT
0000	0000	MATERIAL
0000	0000	CONTRACT EQUIPMENT
0000	0000	CONTRACT COPIES
0000	0000	DIRECT ADMINISTRATIVE COSTS (SUBAWARDS)
0000	0000	Deduct Cal-B (00000) Per 100, See 000-0000
0010	0000	Deduct Cal-B (00000) Per 100, See 000-0000
0010	0000	WORK TO BE COMPLETED
0010	0000	Paving based on contractor bid

0000	0000	Default Call to 000000 Per 100 Yds 000-0000
0000	0000	Default Call to 000000 Per 100 Yds 000-0000
0010	0000	Default Call to 000000 Per 200 Yds 000-0000
0011	0000	000000 To Be Completed
0012	0000	Paving based on condition 000
000 HAZARD MITIGATION PROPOSAL (\$)		
000 Hazard Mitigation Proposal Cost Description (Source of Cost Estimate)		
0000	0000	00000000
0000	0000	00000000
		Estimate
00000000	0000	00000000
00000000		000
00000000		
SITE COST		
Cost Description (Source of Cost Estimate)		
0000	0000	00000000
0000	0000	Per Road
000 HAZARD MITIGATION PROPOSAL (\$)		
000 Hazard Mitigation Proposal Cost Description (Source of Cost Estimate)		
0000	0000	00000000
		Estimate
0000	0000	Per Road
000 HAZARD MITIGATION PROPOSAL (\$)		
000 Hazard Mitigation Proposal Cost Description (Source of Cost Estimate)		



Barcode and QR Code

PDF: Watermark

Examples \ PDF \

PDF: Watermark

PDF

Watermark
my own watermark

AOP supports watermarks in a PDF. You can define up to 4000 characters for your watermark by setting the global variable `g_output_watermark` in Init PL/SQL Code.

```
example: aop_api_pkg.g_output_watermark := 'my own watermark';
```

▶ Template and Data Source being used by the AOP APEX Plug-in

▶ Instead of using the APEX Plug-in, you can do it from PL/SQL too

Home Application 498 Edit Page 5302 Session View Debug Debug Page Info Quick Edit Theme Roller

US AMR 423 Budget Summary – 2020

Strategic Objective	Proposed projects to address gaps	New or Committed	Priority	2020 OSE (\$000s USD)
Articulate an impartial value story that secures high quality access for a clearly defined population	Development of Validated HbA1c Algorithm (Rutin Permanent)	Committed	1	\$150
	Remove 20k Non-Pharmaceutical Hb Intervention	New	1	\$100
	Sub-Total			\$250
Recognize global economic value AMR 423 across acute and chronic treatment settings (HbA1c, HbC2)	HbA1c Comparative Analysis of Efficacy and Safety Treatment Patterns and Outcomes among Medicare Beneficiaries	New	1	\$100
	Sub-Total			\$200
	Grand Total			\$1,050

{!product} {region} {product_name} Budget Summary – {year_1}

Strategic Objective	Proposed projects to address gaps	New or Committed	Priority	{year_1} OSE (\$000s USD)
{#prod_str}{strategic objective}	{=project}{project description}	{committed new}	{priority}	\$(amount){project}
	Sub-Total			\$(ose){/product}
	Grand Total			\$(total)

Word File Edit View Insert Format Tools Table Window Help

aop_jet_d02

Search in Document

Home Insert Design Layout References Mailings Review View

Paste

Calibri (Body) 12 A A A A

B I U abc X₂ X²

AaBbCcDdEe Normal AaBbCcDdEe No Spacing AaBbCcDc Heading 1 AaBbCcDdEe Heading 2 AaBbC Title AaBbCcDdEe Subtitle AaBbCcDdEe Subtle Emph... AaBbCcDdEe Emphasis AaBbCcDdEe Intense Emp... AaBbCcDdEe Strong

Styles Pane

Size 62 KB

Oracle Application Express (APEX): Printing JET Charts

Here's my custom JET Chart straight from APEX by using APEX Office Print:

{%combo1_jet}

Welcome back!

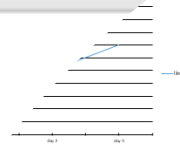
Page 1 of 2 28 Words English (US)

120%

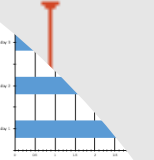
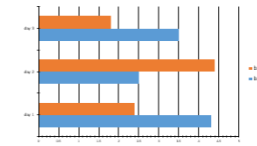
JET Charts

{!charts}
{name}

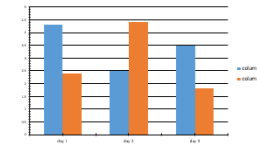
{Schart}



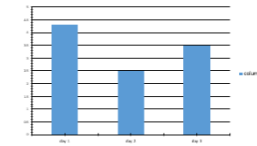
AOP Chart Example 3: Multiple bars



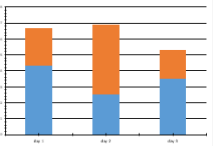
AOP Chart Example 7: Multiple columns



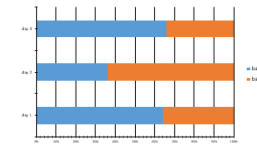
AOP Chart Example 8: Single column



AOP Chart Example 9: Column



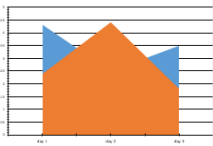
AOP Chart Example 12: Bar Stacked Percent



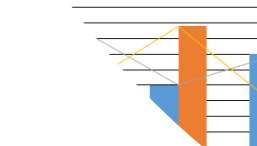
AOP Chart Example 13: Radar Chart



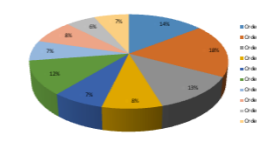
AOP Chart Example 14: Multiple

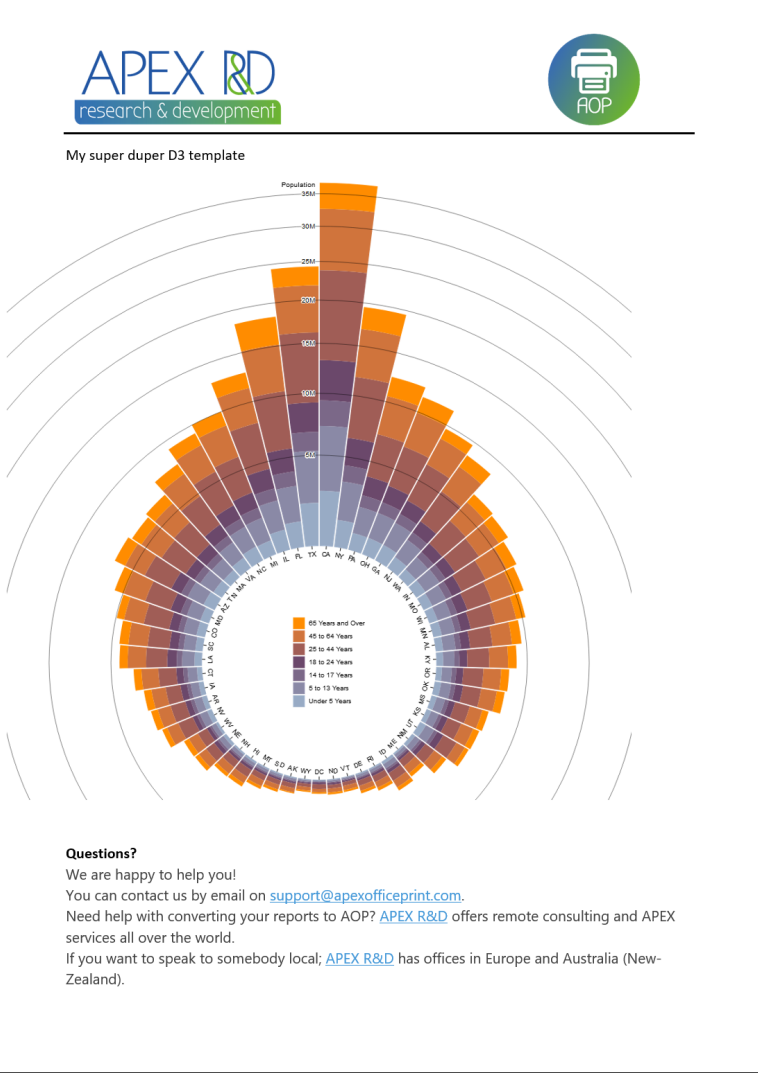
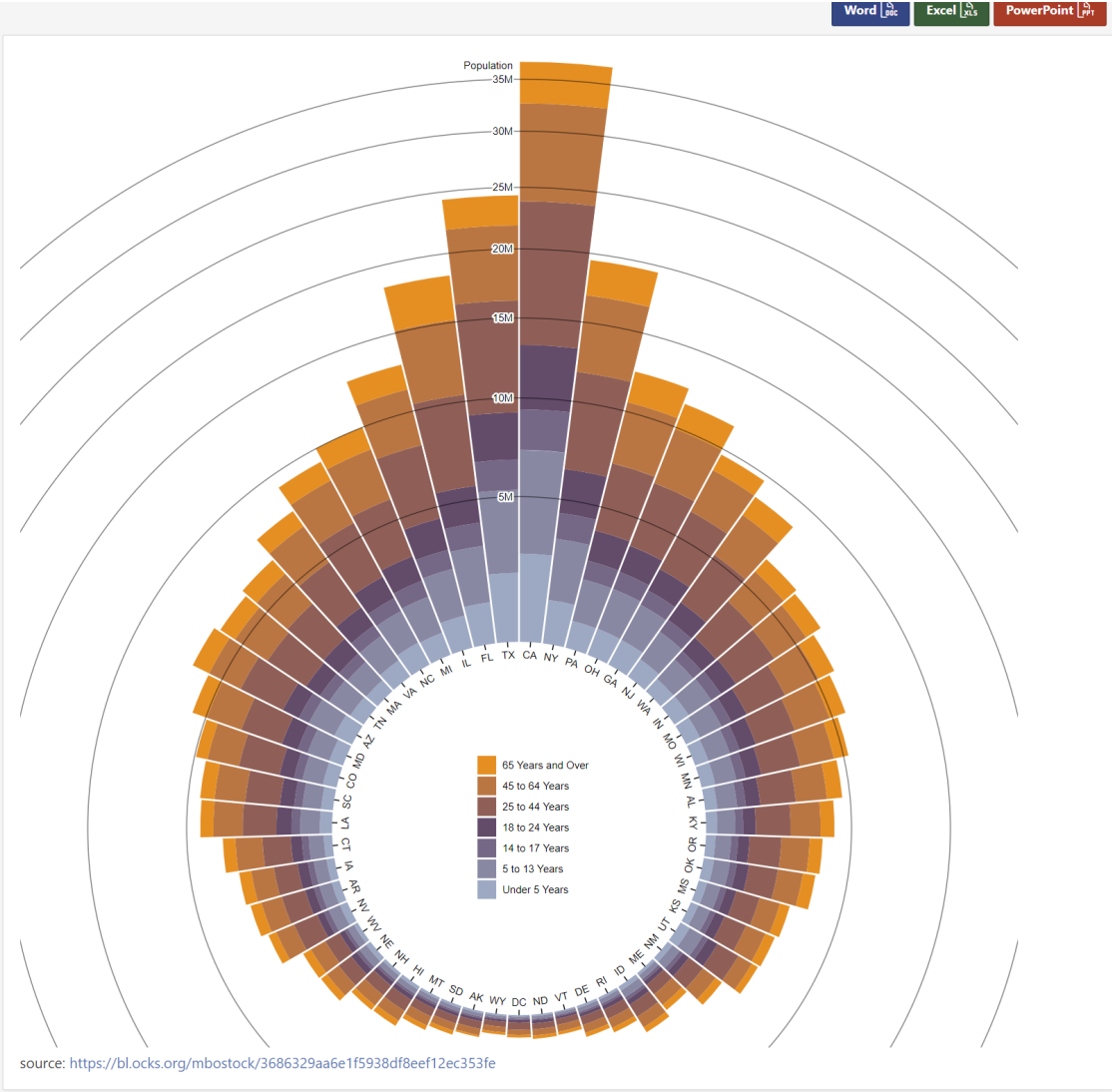


OP Chart Example 17: Combining
!title



AOP Chart Example 18: 3D Pie







{?CALENDAR cal}

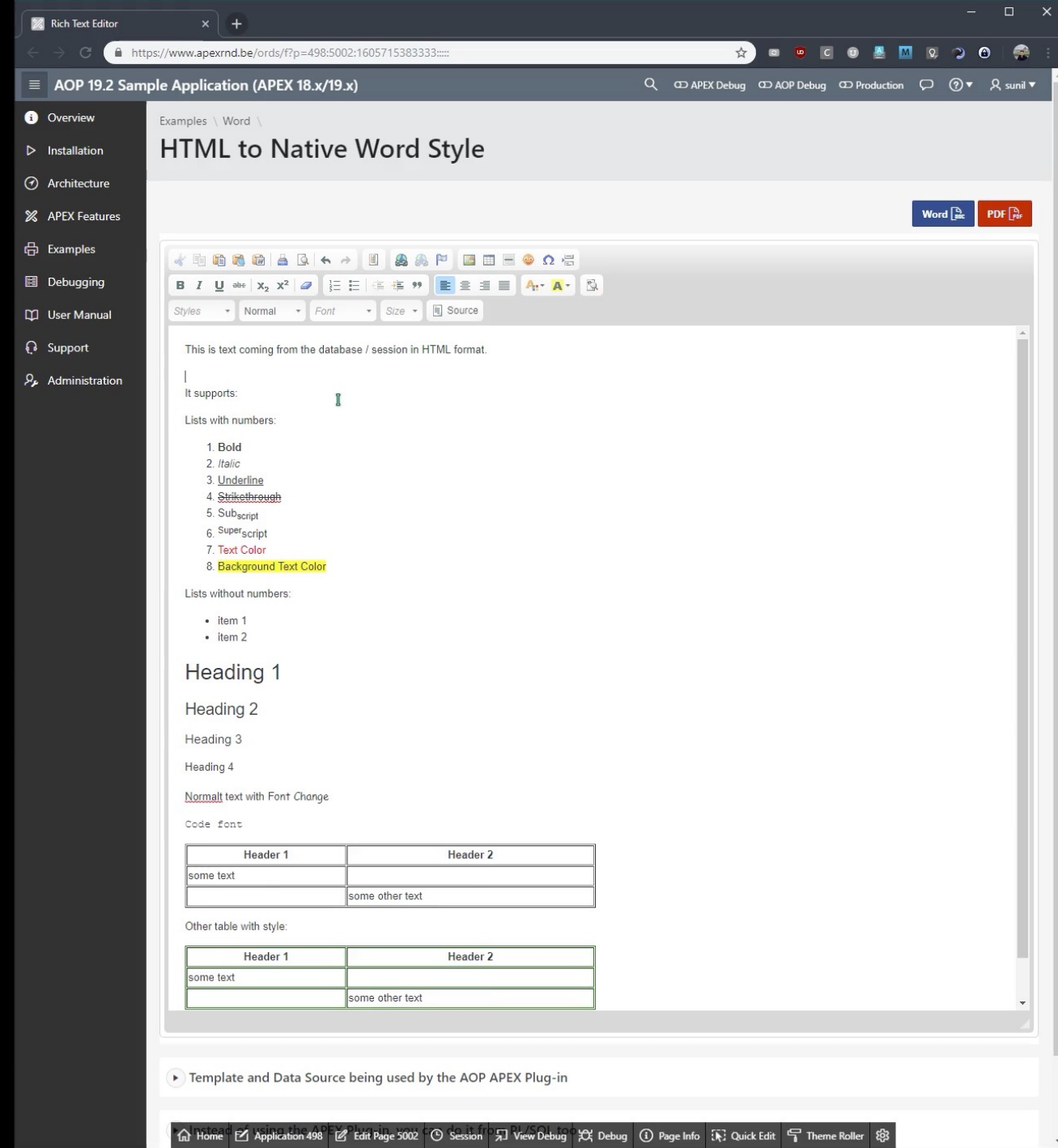
Home Varsity Athletic Events
{cal.settings[0].months}

Home Varsity Athletic Events
September 2019

September 2019

Mon	Tue	Wed	Thu	Fri	Sat	Sun
						1
2	3	4 7:00P W V Soccer vs. Quinnipiac	5	6 7:00P W V Volleyball Harvard Invitational vs. Sacred Heart	7 1:00P W V Volleyball Harvard Invitational vs. Colgate 7:00P W V Volleyball Harvard Invitational vs. URI	8 10:00A M V Water Polo Cal Lutheran 1:00P W V Soccer vs. Northwestern 2:15P M V Water Polo McKendree
9	10 7:00P W V Soccer vs. UMass Amherst	11	12 4:00P V Field Hockey vs. Stanford	13 3:00P W V Soccer vs. San Francisco	14	15
16	17 7:00P W V Volleyball vs. Boston College 7:00P W V Soccer vs. UMass Lowell	18	19	20 7:00A W V Tennis Fall Classic (BU, BC, Buffalo, UMass, Brown) 7:00A W V Tennis Fall Classic (BU, BC, Buffalo, UMass, Brown)	21 -TBA- W V Rugby vs. Dartmouth 7:00A W V Tennis Fall Classic (BU, BC, Buffalo, UMass, Brown) 7:00A W V Tennis Fall Classic (BU, BC, Buffalo, UMass, Brown) 2:00P W V Soccer vs. LIU 2:00P W V Volleyball vs. Syracuse	22 7:00A W V Tennis Fall Classic (BU, BC, Buffalo, UMass, Brown) 7:00A W V Tennis Fall Classic (BU, BC, Buffalo, UMass, Brown) 1:00P V Field Hockey vs. Maine
23	24 7:00P M V Soccer vs. Merrimack	25	26	27 7:00P V Football vs. Brown	28 2:00P W V Soccer vs. Penn 5:00P W V Volleyball vs. Dartmouth	29 2:00P V Field Hockey vs. UNH
30						

Calendar



HTML
to Word

PowerPoint Native Office Charts

https://www.apexrnd.be/ords/?p=498:5015:13365150404352:NO::AOP_MODE&cs=3hLyUEpuKSNF7eFGClF5PIF9N...

AOP 19.2 Sample Application (APEX 18.x/19.x)

Overview

Installation

Architecture

APEX Features

Examples

Debugging

User Manual

Support

Administration

Examples \ PowerPoint \

Native Office Charts

PowerPoint

AOP is able to generate native office charts that you can further manipulate by opening the output unlike JET charts where a screenshot is taken. It is also possible to dynamically change the layout of the chart. The default options for the native charts are as follows:

```
defaultOptions = {
  width: 5486400 / 9525, // width of the chart
  height: 3200400 / 9525, // height of the chart
  grid: true, // if a grid should be shown
  border: true, // if a border should be shown
  title: false,
  legend: {
    showLegend: true, // if the legend should be shown
    position: 'r' // 'l' for left, 'r' right, 'b' bottom, 't' top
  },
  axis: {
    x: {
      orientation: 'minMax', // or "maxMin"
      min: undefined, // a specific number
      max: undefined, // a specific number
      type: undefined, // or "date"
      date: { //date options
        format: 'unix',
        code: 'mm/yy',
        unit: 'months',
        step: '1'
      },
    },
    showValues: true //options to disable showing the values in axis
  },
  y: {
    orientation: 'minMax',
    mix: undefined,
    max: undefined,
    showValues: true // options to disable showing the values in axis
  },
  y2: { //If using multiple charts and axis on the right side
    orientation: 'minMax',
    mix: undefined,
    max: undefined,
    showValues: true // options to disable showing the values in axis
  }
}
```

It is also possible to generate multiple series chart. More info can be found on page 5004 . The tag used in Word, Excel and Powerpoint are the same and the structure is the same to generate native office charts.

Column Chart

{ \$column_chart }

Bar Chart

{ \$bar_chart }

Home

Application 498

Edit Page 5015

Session

View Debug

Debug

Page Info

Quick Edit

Theme Roller

Template and Data Types

https://www.apexmd.be/ords181/f?p=498:65:7356474783870:::

AOP 19.1 Sample Application (APEX 18.x)

Examples \

Template and Data Types

Word

Url
https://docs.google.com/document/d/1aGyfC9-nthwDQ4kVWgl3afNa1eLfjL-iiByDXX1ool/edit?usp=sharing

Different Template Types

AOP Template	AOP Template: will generate a Word document with a starting template based on the data (JSON) that is submitted. Documentation is also added on the next page(s) that describe the functions AOP will understand.
Static Application Files	Enter the filename of the file uploaded to your Shared Components > Static Application Files e.g. aop_template_d01.docx
Static Workspace Files	Enter the filename of the file uploaded to your Shared Components > Static Workspace Files e.g. aop_template_d01.docx
SQL	Query that returns two columns: template_type and file (in this order) - template_type: docx,xlsx,pptx - file: blob column
PL/SQL Function (returning SQL)	Enter a PL/SQL procedure that returns a select statement with two columns: template_type and file (in this order) - template_type: docx, xlsx, pptx, html, md - file: blob column Note that you can use bind variables e.g. :PXX_ITEM.
PL/SQL Function (returning JSON)	Return JSON object with following format: <pre>{ "file": "clob base 64 data", "template_type": "docx,xlsx,pptx"}</pre>
Filename (with path relative to AO...	Enter the path and filename of the template which is stored on the same server AOP is running at.
URL (call from DB)	Enter the url to your template in docx, xlsx or pptx. e.g. http://apexofficeprint.com/templates/aop_template_d01.docx This call is done from the database, so the database server needs to have access to the url.
URL (call from AOP)	Enter the url to your template in docx, xlsx or pptx. e.g. https://www.apexofficeprint.com/templates/aop_template_d01.docx This call is done from AOP, so the AOP server needs to have access to the url.

Home Application 498 Edit Page 65 Session View Debug Debug Page Info Quick Edit Theme Roller

AOP URL Template Source

Search Google or type a URL

Google

Search Google or type a URL

VRT NWS

Facebook

YouTube

Editor

Editor

Engadget

Slashdot

Application Exp...

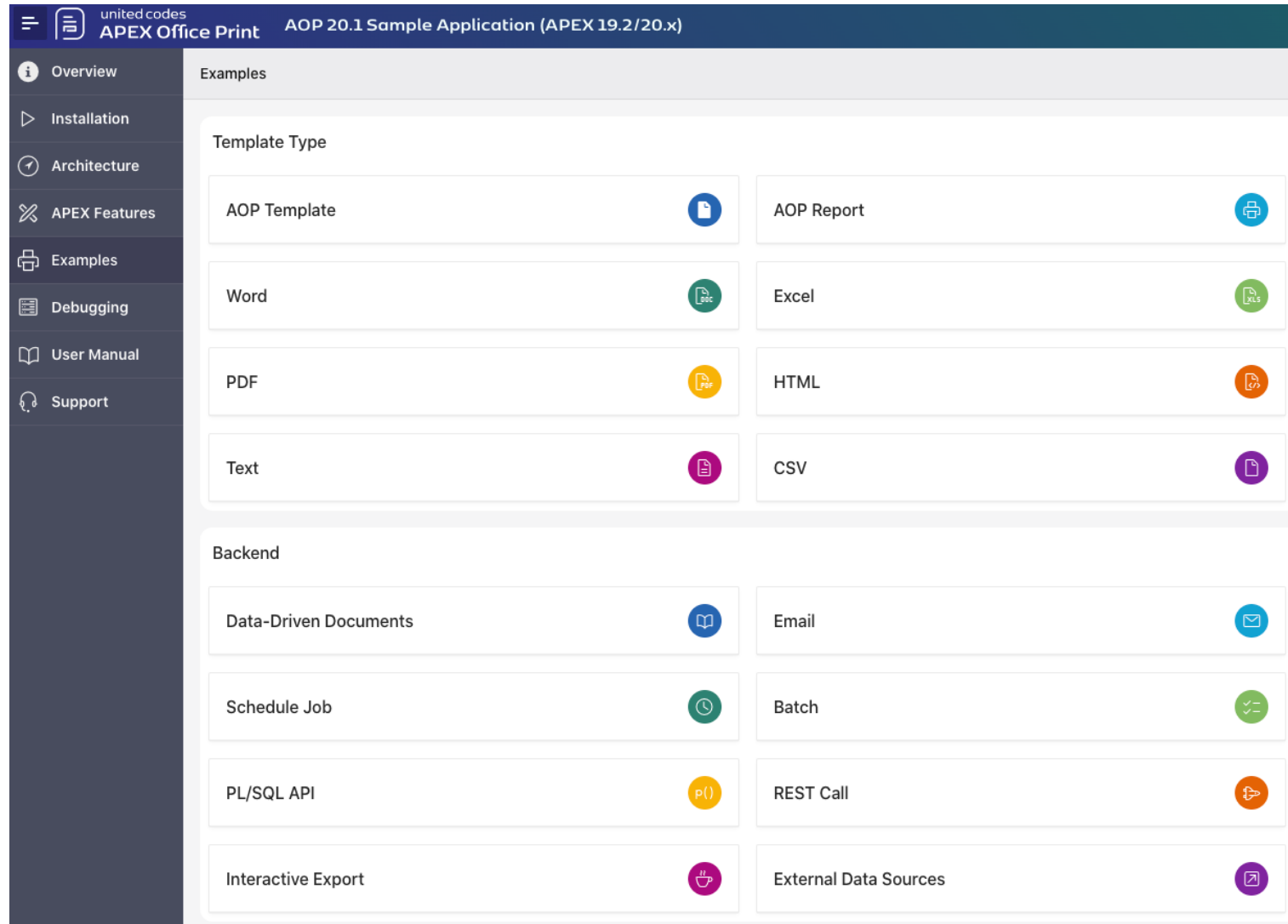
APEX Office Pri...

Add shortcut

URL as Template

AOP Sample Application

- Download to install in your own workspace or use the online version apexofficeprint.com
- Hundreds of examples
- It's an APEX application – install it and look behind the scenes how things are done



AOP Demo (zebra)

Questions?



APEX Office Print



APEX Office Print



APEX Media Extension



APEX Project Eye