

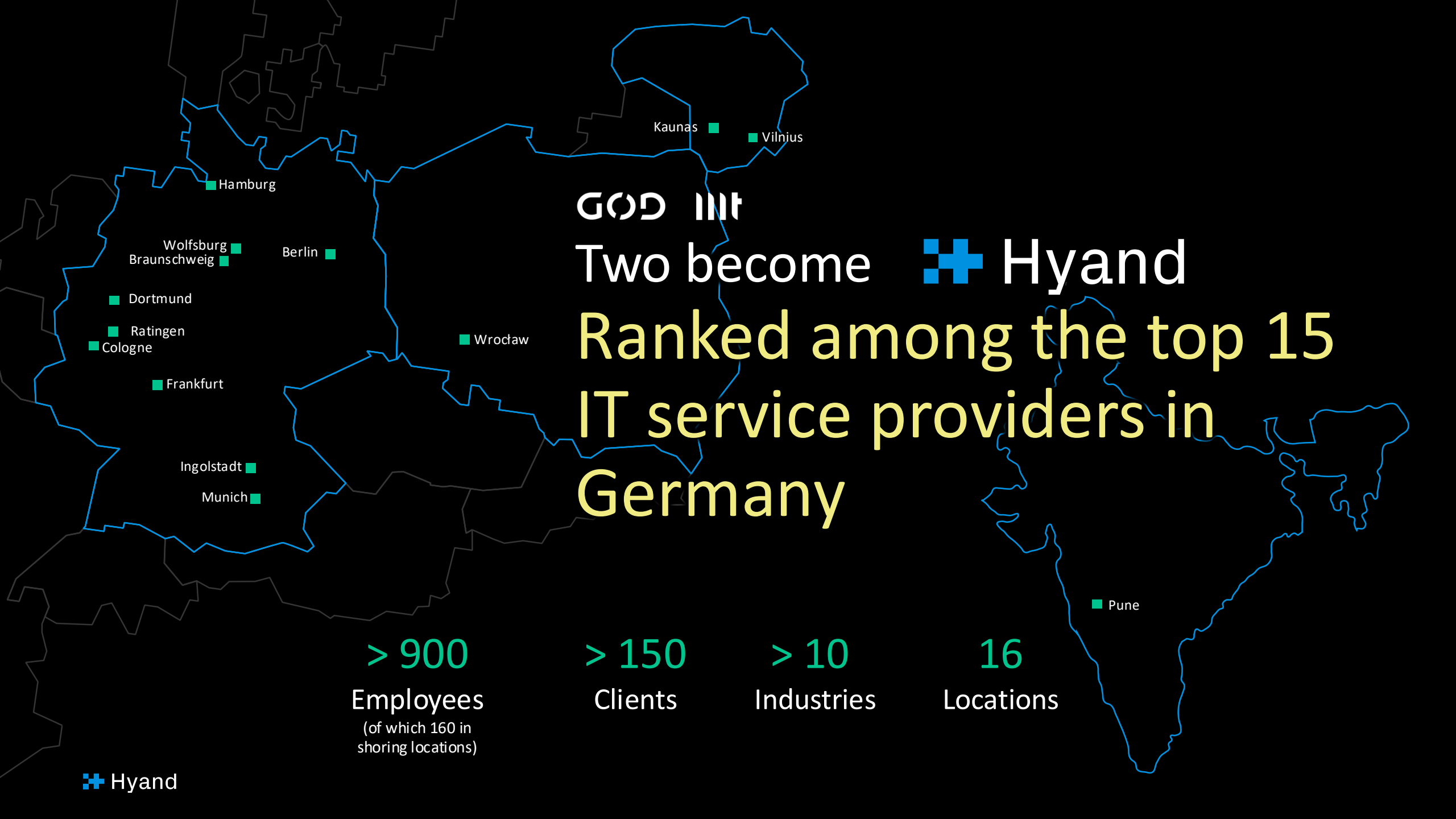
20.11.2024, Fabian Neureiter

Hands-On AI Features

An OCI Document Understanding Deep Dive

code of change

 **Hyand** by
GOD | MT



GOD III

Two become Hyand Ranked among the top 15 IT service providers in Germany

> 900

Employees
(of which 160 in
shoring locations)

> 150

Clients

> 10

Industries

16

Locations

whoami



Fabian Neureiter
Oracle APEX Developer

Part of the JavaScript Team @ Hyand

Certified Tester, specialized in automated UI Testing

Lead Developer [LCT - Low Code Testing](#)

Motivation for this talk

ON TECH: A.I. NEWSLETTER

How Should I Use A.I. Chatbots Like ChatGPT?

Large language models are already good at a wide variety of tasks.

TECHNOLOGY EXECUTIVE COUNCIL

How ChatGPT is changing the job hiring process, from the HR department to coders

PUBLISHED SAT, APR 8 2023-10:00 AM EDT | UPDATED SAT, APR 8 2023-11:05 AM UNDEFINED EDT

Kevin Travers, special to CNBC.com

FORBES > INNOVATION

BREAKING

Here's How To Use AI—Like ChatGPT And Bard—For Everyday Tasks Like Creating A Budget, Finding Airfare Or Planning Meals

Arianna Johnson Forbes Staff
I cover the latest trends in science, tech and healthcare.

Follow

HOME > TECH

Can ChatGPT be a doctor?

Asia Martin Apr 10, 2023, 3:48 AM

FORBES > INNOVATION

How Generative AI And ChatGPT Are Shaping The Contact Center

Muddu Sudhakar Forbes Councils Member
Forbes Technology Council
COUNCIL POST | Membership (Fee-Based)

ChatGPT: Your AI-Powered Cryptocurrency Resource

Siamak Masnavi
10 Apr 2023 / In #AI, #cryptocurrency

The Industrial Economy Greets Generative AI With Open Arms

Home / Innovation / Artificial Intelligence

How to use ChatGPT to write code

BY PYMNTS
APRIL 7, 2023

Can ChatGPT replace programmers? What programming languages does ChatGPT know? We answer these and your other generative AI coding questions.

HOME > TECH

A college student got a top grade for an essay written with the help of ChatGPT, report says

Beatrice Nolan Apr 10, 2023, 4:00 AM

The AI Hype





AI Tool that is useful to me

Github Copilot

Saw the media coverage

→ Mildly interested

Saw Youtubers using it

→ Mildly interested

Saw a colleague of mine using it

-> **Very interested!**

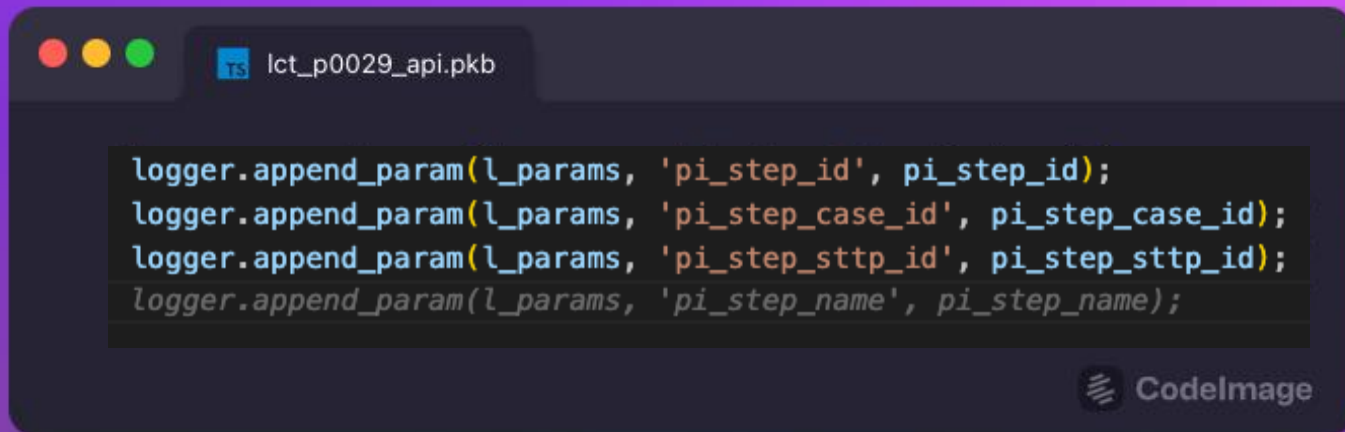



```
index.tsx

procedure update_step (
  pi_step_id                in lct_steps.step_id%type
, pi_step_case_id          in lct_steps.step_case_id%type
, pi_step_sttp_id          in lct_steps.step_sttp_id%type
, pi_step_name              in lct_steps.step_name%type
, pi_step_execution_sequence in lct_steps.step_execution_sequence%type
, pi_checksum              in types_pkg.t_checksum
, pi_user                  in types_pkg.t_user default v('APP_USER')
, pi_app_id                in apex_applications.application_id%type
, pi_page_id               in apex_application_pages.page_id%type
, pi_element               in types_pkg.t_vc_max
, pi_value                 in types_pkg.t_vc_max
, pi_context               in types_pkg.t_vc_max
, pi_page_is_modal         in number
, pi_selector_type         in types_pkg.t_vc_max
, pi_custom_selector       in types_pkg.t_vc_max
, pi_custom_selector_text  in types_pkg.t_vc_max
, pi_step_timeout          in number
, pi_force_interaction     in number
, pi_selectOption_option   in types_pkg.t_vc_max
, pi_append_session_id     in number
, pi_path                  in types_pkg.t_vc_max
, pi_nav_referer           in types_pkg.t_vc_max
, pi_nav_wait_until        in types_pkg.t_vc_max
, pi_click_btn_type        in types_pkg.t_vc_max
, pi_click_click_count     in number
, pi_delay                 in number
, pi_trial                 in number
, pi_presskey_modifiers    in types_pkg.t_vc_max
, pi_presskey_key          in types_pkg.t_vc_max
, pi_click_wait_for_navigation in number
, pi_selectOption_select_by in types_pkg.t_vc_max
, pi_waitMilliseconds_time in number
, pi_remove_target         in number
, pi_region                in types_pkg.t_vc_max
, pi_column_id             in types_pkg.t_vc_max
)
as
  l_scope logger_logs.scope%type := gc_scope_prefix || 'update_step';
  l_params logger.tab_param;

begin
```





The image shows a code editor window with a dark theme. The window title is "lct_p0029_api.pkb" with a TypeScript icon. The code contains four lines of TypeScript code that use the `logger.append_param` method to log various parameters. The code is as follows:

```
logger.append_param(l_params, 'pi_step_id', pi_step_id);  
logger.append_param(l_params, 'pi_step_case_id', pi_step_case_id);  
logger.append_param(l_params, 'pi_step_sttp_id', pi_step_sttp_id);  
logger.append_param(l_params, 'pi_step_name', pi_step_name);
```

In the bottom right corner of the editor, there is a "CodeImage" logo and text.

```
lct_p0029_api.pkb

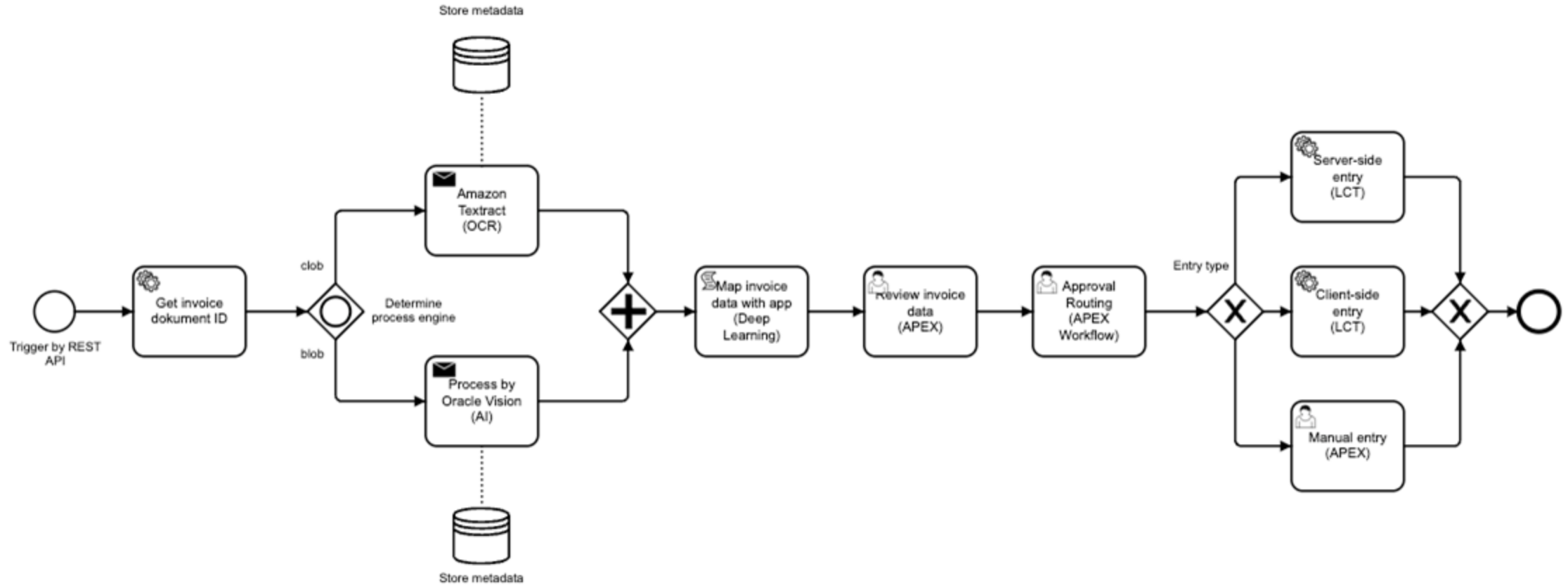
logger.append_param(l_params, 'pi_step_id', pi_step_id);
logger.append_param(l_params, 'pi_step_case_id', pi_step_case_id);
logger.append_param(l_params, 'pi_step_sttp_id', pi_step_sttp_id);
logger.append_param(l_params, 'pi_step_name', pi_step_name);
logger.append_param(l_params, 'pi_step_execution_sequence', pi_step_execution_sequence);
logger.append_param(l_params, 'pi_checksum', pi_checksum);
logger.append_param(l_params, 'pi_app_id', pi_app_id);
logger.append_param(l_params, 'pi_page_id', pi_page_id);
logger.append_param(l_params, 'pi_element', pi_element);
logger.append_param(l_params, 'pi_value', pi_value);
logger.append_param(l_params, 'pi_context', pi_context);
logger.append_param(l_params, 'pi_page_is_modal', pi_page_is_modal);
logger.append_param(l_params, 'pi_selector_type', pi_selector_type);
logger.append_param(l_params, 'pi_custom_selector', pi_custom_selector);
logger.append_param(l_params, 'pi_custom_selector_text', pi_custom_selector_text);
logger.append_param(l_params, 'pi_step_timeout', pi_step_timeout);
logger.append_param(l_params, 'pi_force_interaction', pi_force_interaction);
logger.append_param(l_params, 'pi_selectOption_option', pi_selectOption_option);
logger.append_param(l_params, 'pi_append_session_id', pi_append_session_id);
logger.append_param(l_params, 'pi_path', pi_path);
logger.append_param(l_params, 'pi_nav_referer', pi_nav_referer);
logger.append_param(l_params, 'pi_nav_wait_until', pi_nav_wait_until);
logger.append_param(l_params, 'pi_click_btn_type', pi_click_btn_type);
logger.append_param(l_params, 'pi_click_click_count', pi_click_click_count);
logger.append_param(l_params, 'pi_delay', pi_delay);
logger.append_param(l_params, 'pi_trial', pi_trial);
logger.append_param(l_params, 'pi_presskey_modifiers', pi_presskey_modifiers);
logger.append_param(l_params, 'pi_presskey_key', pi_presskey_key);
logger.append_param(l_params, 'pi_click_wait_for_navigation', pi_click_wait_for_navigation);
logger.append_param(l_params, 'pi_selectOption_select_by', pi_selectOption_select_by);
logger.append_param(l_params, 'pi_waitMilliseconds_time', pi_waitMilliseconds_time);
logger.append_param(l_params, 'pi_user', pi_user);
logger.append_param(l_params, 'pi_remove_target', pi_remove_target);
logger.append_param(l_params, 'pi_region', pi_region);
logger.append_param(l_params, 'pi_column_id', pi_column_id);
logger.log('START', l_scope, null, l_params);
```

CodelImage



*< AI is a useful tool to help with
cumbersome tasks/>*

Hyperautomation



OCI Document Understanding – A solution?

The screenshot shows the Oracle Cloud Infrastructure (OCI) website page for Document Understanding. The page has a dark header with the OCI logo and navigation links: About, Services, Solutions, Pricing, Partners, Resources. There are also search, language (US flag), and sign-in options. Below the header is a secondary navigation bar with links: Overview, Generative AI, AI Services, ML Services, AI Infrastructure, ISVs, Solutions, Pricing, Customers. The main content area has a breadcrumb trail: Cloud > Artificial Intelligence >. The title is "Document Understanding". The introductory text states: "Oracle Cloud Infrastructure (OCI) Document Understanding is an AI service that enables developers to extract text, tables, and other key data from document files through APIs and command line interface tools. With OCI Document Understanding, you can automate tedious business processing tasks with prebuilt AI models and customize document extraction to fit your industry-specific needs." Below this is a navigation bar with "Overview", "Features", and "Pricing". The "Overview" section is active. There are three columns of content: 1. "IDC: Enterprise business transformation" with a sub-header "Artificial intelligence is rapidly becoming integrated across business functions. IDC explores best practices and recommendations for enterprise AI." and a button "Read the IDC ebook (PDF)". 2. "IDC Perspective: Innovation with AI" with a sub-header "This IDC report explores current challenges and provides guidance on putting together a foundational data strategy for AI." and a button "Read the IDC report". 3. "Automate and innovate with OCI Document Understanding" with a sub-header "Developers can now obtain text, tables, and other key data from document files through pretrained or custom trained AI models. Watch the webinar to discover how to use OCI Document Understanding." and a button "Watch the video (46:57)".

OCI

About Services Solutions Pricing Partners Resources

Overview Generative AI AI Services ML Services AI Infrastructure ISVs Solutions Pricing Customers

Cloud > Artificial Intelligence >

Document Understanding

Oracle Cloud Infrastructure (OCI) Document Understanding is an AI service that enables developers to extract text, tables, and other key data from document files through APIs and command line interface tools. With OCI Document Understanding, you can automate tedious business processing tasks with prebuilt AI models and customize document extraction to fit your industry-specific needs.

Overview Features Pricing

IDC: Enterprise business transformation
Artificial intelligence is rapidly becoming integrated across business functions. IDC explores best practices and recommendations for enterprise AI.
[Read the IDC ebook \(PDF\)](#)

IDC Perspective: Innovation with AI
This IDC report explores current challenges and provides guidance on putting together a foundational data strategy for AI.
[Read the IDC report](#)

Automate and innovate with OCI Document Understanding
Developers can now obtain text, tables, and other key data from document files through pretrained or custom trained AI models. Watch the webinar to discover how to use OCI Document Understanding.
[Watch the video \(46:57\)](#)

Agenda

1. Document Understanding – what is it and how does it work?
2. How can we use it?
3. What do we need to use it? – Setting up your OCI Instance
4. The Document Understanding REST API – A closer look
5. Live Demo – Using the API in APEX
6. (Current) Limits of the service
7. Remedies
8. A couple of things to think about

Document Understanding

What is it?

Document Understanding – what is it?

Document Understanding is an ai-powered service of the Oracle Cloud Infrastructure (OCI) that enables its users to automatically extract information from certain kinds of Documents.

Document Understanding – what is it?

Out of the Box supported document types

- Invoices
- Receipt
- Resume
- Tax Form
- Driver's License
- Passport
- Bank Statement
- Payslip

What kinds of information do we get?

- Text
- Tables
- Key/Value (Information identified by pretrained keywords)
- Document Classification

Text extraction



algorithms run as native SQL functions; not as PL/SQL scripts, call-outs or extensibility framework add-ins. Models are first class database objects that can be built, applied, shared, and audited.

In the early 2000's, starting in Oracle Data Mining Release 9.2i, Oracle's first data mining algorithms took advantage of available core Database's strengths—specifically, counting, parallelism, scalability and other database architectural underpinnings. Essentially, the first two Oracle data mining algorithms, Naive Bayes and A Priori algorithms, are based on counting principles. They count everything very quickly and then assemble conditional probability predictive models—all 100% inside the database. Neither the data, the predictive models nor the results ever leave the database.

OAA Naive Bayes algorithm can quickly build predictive models to predict e.g., "Who will churn?", "Which customers are most likely to purchase Product A?", or "What is the probability that an item will fail?". Let's take an example in a bit more detail for comprehension. Let's say we are interested in selling Product A (e.g., a motorcycle or \$500 shoes, etc.). The Oracle Advanced Analytics data mining algorithms, specifically the Naive Bayes algorithm, of all the customers who purchased Product A, it counts how many customers were male vs. female, how many rent an apartment vs. own their own home? How many have children and how many? Each of these answers involves counts that, taken together, can form a complex conditional probability model that accurately predicts whom we should target to increase our likelihood of selling more of Product A.

OAA's A Priori "market basket analysis" algorithm counts items in each customer's transactional "baskets" while looking for co-occurring items e.g. A + B appear together frequently, and then provides conditional probability AR rules. For example:

IF "Cereal" AND "Bananas" appear in the same customer's basket
THEN, the "Milk" is also likely to appear in the basket!
WITH Confidence = 87%, and Support = 11%.

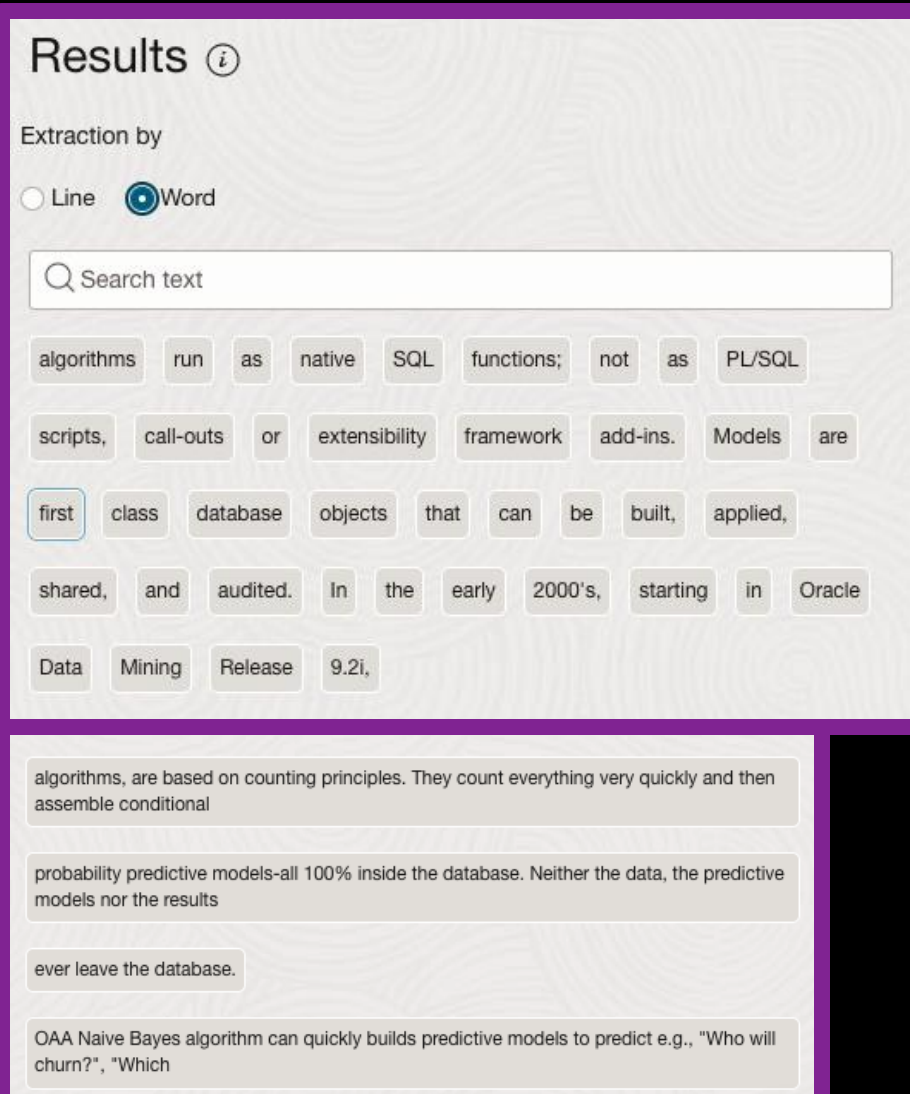
Armed with these types of new customer insights from Oracle Advanced Analytics, a store could decide to place the milk near the cereal and bananas, offer new promotional "breakfast kit" product bundles or make real-time customer specific recommendations as the customer checks-out. This is just a simple example of the types of ways that big data analytics can find "actionable insights" from data. Obviously, more data, more advanced analytics methodologies and fast enterprise wide deployment can open new doors to many new big data and analytics applications and solutions possibilities.

SQL and R Support

Where SQL is the standard language for data management and has been for 40+ years, for data analysis, various languages compete—R, SAS, Python and SQL and others. SAS, S+, SQL, SPSS and Matlab have been long time favorites, but in recent past years, open source R especially has surged to the top of the pack and Python and others have emerged. Per the KDD Nuggets data mining industry community annual poll: <http://www.kddnuggets.com/polls/>, R and SQL currently compete for #1 and #2 positions, respectively.

The good news is that Oracle Advanced Analytics supports both languages—SQL and R. There are legions of developers who know SQL for data management and Oracle provides support for data mining and advanced analytics via Oracle Advanced Analytics' SQL data mining functions and provides tight, industry leading integration with open source R statistical programming language.

Most Oracle customers are very familiar with SQL as a language for query, reporting, and analysis of structured data. It is the de facto standard for analysis and the technology that underlies most BI tools. R is a widely popular



Results i

Extraction by

Line Word

Search text

algorithms run as native SQL functions; not as PL/SQL scripts, call-outs or extensibility framework add-ins. Models are first class database objects that can be built, applied, shared, and audited. In the early 2000's, starting in Oracle Data Mining Release 9.2i,

algorithms, are based on counting principles. They count everything very quickly and then assemble conditional probability predictive models-all 100% inside the database. Neither the data, the predictive models nor the results ever leave the database.

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Table extraction

Partnership Agreement Example

THIS PARTNERSHIP AGREEMENT is made this _____ day of _____, 20__, by and between the following individuals: Address: _____
City/State/ZIP: _____ Address: _____
City/State/ZIP: _____

1. Nature of Business. The partners listed above hereby agree that they shall be considered partners in business for the following purpose:

2. Name. The partnership shall be conducted under the name of _____ and shall maintain offices at [STREET ADDRESS], [CITY, STATE, ZIP]. 3. Day-To-Day Operation. The partners shall provide their full-time services and best efforts on behalf of the partnership. No partner shall receive a salary for services rendered to the partnership. Each partner shall have equal rights to manage and control the partnership and its business. Should there be differences between the partners concerning ordinary business matters, a decision shall be made by unanimous vote. It is understood that the partners may elect one of the partners to conduct the day-to-day business of the partnership; however, no partner shall be able to bind the partnership by act or contract to any liability exceeding \$ _____ without the prior written consent of each partner.

4. Capital Contribution. The capital contribution of each partner to the partnership shall consist of the following property, services, or cash which each partner agrees to contribute:

Name of Partner	Agreed Upon Cash	% Share
Sample partner	1 Million USD	20%
Another partner	1.5 Million USD	23%

The partnership shall maintain a capital account record for each partner; should any partner's capital account fall below the agreed to amount, then that partner shall (1) have his share of partnership profits then due and payable applied instead to his capital account; and (2) pay any deficiency to the partnership if his share of partnership profits is not yet due and payable or, if it is, his share is insufficient to cancel the deficiency.

5. Profits and Losses. The profits and losses of the partnership shall be divided by the partners according to a mutually agreeable schedule and at the end of each calendar year according to the proportions listed above. 6. Term/Termination. The term of this Agreement shall be for a period of ____ years, unless the partners mutually agree in writing to a shorter period. Should the partnership be terminated by unanimous vote, the assets and cash of the partnership shall be used to pay all creditors, with the

Results ⓘ

Table results: (1)

Table 1

Search text

Name of Partner	Agreed Upon Cash	% Share
Sample partner	1 Million USD	20%
Another partner	1.5 Million USD	23%

Document classification

1 THIS FIRST BANK

FIRST CHOICE ACCOUNT

MANDARIN BRANCH
4444 THIS STREET
ANYTOWN, STATE 00000-0000

CUSTOMER SERVICE 24 HOURS A DAY, 888-000-0000

JOHN Q. CUSTOMER
1234 MAIN STREET
ANYTOWN, STATE 00000-0000

ACCOUNT
12345-678910
STATEMENT PERIOD
1-1-2000 TO 2-1-2000

THANK YOU FOR BANKING WITH THISFIRST

SUMMARY OF YOUR ACCOUNTS

CHECKING	SAVINGS
BEGINNING BALANCE	500.000
DEPOSITS	538.68
WITHDRAWALS	629.73
SERVICE CHARGES/FEES	6.00
ENDING BALANCE	794.57
MIN BAL ON 2-1-00	54.87

CHECKING ACTIVITY

DEPOSITS POSTED	AMOUNT	DESCRIPTION
1-05	230.66	DEPOSIT
1-15	765.50	DEPOSIT

WITHDRAWALS CKNO	PAID	AMOUNT
106	1-16	632.75
107	1-24	35.98
108	1-26	72.43

POSTED	AMOUNT	DESCRIPTION
1-21	40.00	ATM WITHDRAWAL
1-22	20.00	ATM WITHDRAWAL

CHECKING SERVICES CHARGE AND FEE SUMMARY

AMOUNT	DESCRIPTION
6.00	MONTHLY SERVICE CHARGE

Results ⓘ

Label	Confidence
BANK STATEMENT	100.00%
OTHERS	0.00%
INVOICE	0.00%
PAYSLIP	0.00%
RESUME	0.00%

▶ Request

▶ Response

How does it work?

How do we know that this is an invoice?

- By looking at the documents **structure**
- By looking at the **text** within the document

GASQ Service GmbH • Rothenburger Str. 11 • 90443 Nuremberg

Mr. Fabian Neureiter
Wilhelm-Stumpf-Straße 84
44789 Bochum

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Rothenburger Str. 11
90443 Nuremberg
Germany
Tel. +49 911 990078 0
Fax +49 911 990078 99

info@gasq.org

Nuremberg, 21.06.2022

Invoice No. 67508

Reference: [REDACTED]

Dear Mr. Fabian Neureiter

We are invoicing you according to your order as follows:

Pos	Description	Amount	Unit Price	Net Price	VAT (19%)	Gross Price
1	ISTQB CTFL E-Exam Exam Date: 07/25/2022 Exam Place: Düsseldorf Participant: Fabian Neureiter	1	215,00 €	215,00 €	40,85 €	255,85 €
Total				215,00 €	40,85 €	255,85 €

The exam fee has been successfully charged to your credit card.

If you should have any further questions, please do not hesitate to contact us.

Sincerely,
Oliver Braun

Example: Document Classification

ML Technologies working in the Background

Document Understanding



Image-based Models



Text-based Models



Hybrid Models

Image-based models

- Have learned an **abstract representation** of a document type
- Classify based on the learned **abstraction**

GASQ Service GmbH • Rothenburger Str. 11 • 90443 Nuremberg

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Example: Document Classification

Hybrid models

Optical Character Recognition (OCR)

- Recognize and extract **words** and/or **lines**
- Works on digitally created and handwritten documents

Nuremberg GASQ Service GmbH Mr. Fabian Neureiter
Rothenburger Str. 11 Wilhelm-Stumpf-Strae 84 90443 Nuremberg
44789 Bochum Germany Tel. +49 911 990078 0 Fax +49
911 990078 99 Oliver Braun info@gasq.org
Nuremberg, 21.06.2022 Invoice No. 67508 Reference: SPR1882
Dear Mr. Fabian Neureiter We are invoicing you according to
your order as follows: Pos Description Amount Unit Price
Net Price VAT (19%) Gross Price 1 ISTQB CTFL E-Exam
1 215,00 € 215,00 € 40,85 € 255,85 € Exam Date:
07/25/2022 Exam Place: Dsseldorf Participant: Fabian Neureiter
Total 215,00 € 40,85 € 255,85 € The exam fee has
been successfully charged to your credit card. If you should
have any further questions, please do not hesitate to
contact us. Sincerely, Oliver Braun GASQ Service GmbH

Example: Document Classification

Text-based models

- Detect **contextual meanings** of extracted words
- Classify based on the learned **context** of the words used in an invoice

Nuremberg GASQ Service GmbH Mr. Fabian Neureiter
Rothenburger Str. 11 Wilhelm-Stumpf-Strae 84 90443 Nuremberg
44789 Bochum Germany Tel. +49 911 990078 0 Fax +49
911 990078 99 Oliver Braun info@gasq.org
Nuremberg, 21.06.2022 Invoice No. 67508 Reference: SPR1882
Dear Mr. Fabian Neureiter We are invoicing you according to
your order as follows: Pos Description Amount Unit Price
Net Price VAT (19%) Gross Price 1 ISTQB CTFL E-Exam
1 215,00 € 215,00 € 40,85 € 255,85 € Exam Date:
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Total 215,00 € 40,85 € 255,85 € The exam fee has
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have any further questions, please do not hesitate to
contact us. Sincerely, Oliver Braun GASQ Service GmbH

What do we need to use it?

Prerequisites

What do we need to use it? - OCI Set Up

OCI Instance Set Up

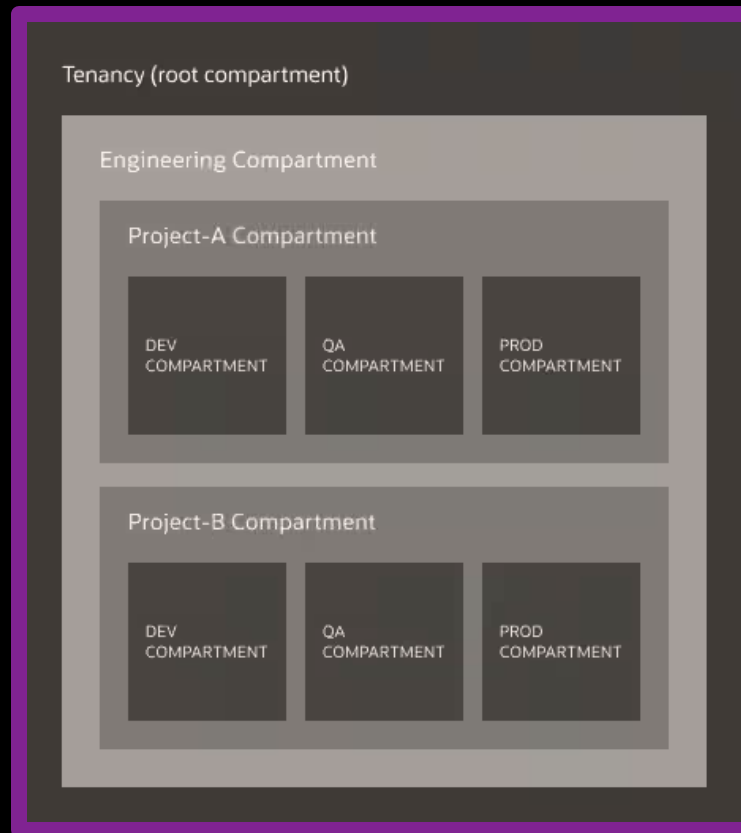
1. Upgrade to paid instance
2. Create a compartment
3. Create a group
4. Create Buckets in Object Storage
5. Create Policies

¹Upgrade to paid instance – Pricing (19.11.2024)

- Pay-as-you-go structure
- Amount is calculated on a **transaction** basis
 - Transaction = Amount of operations per page of the document
 - Billing is per 1000 Transactions
 - 5000 Transactions free
- Difference between individual and corporate accounts
- Price Difference in using the pretrained models and training and using custom models

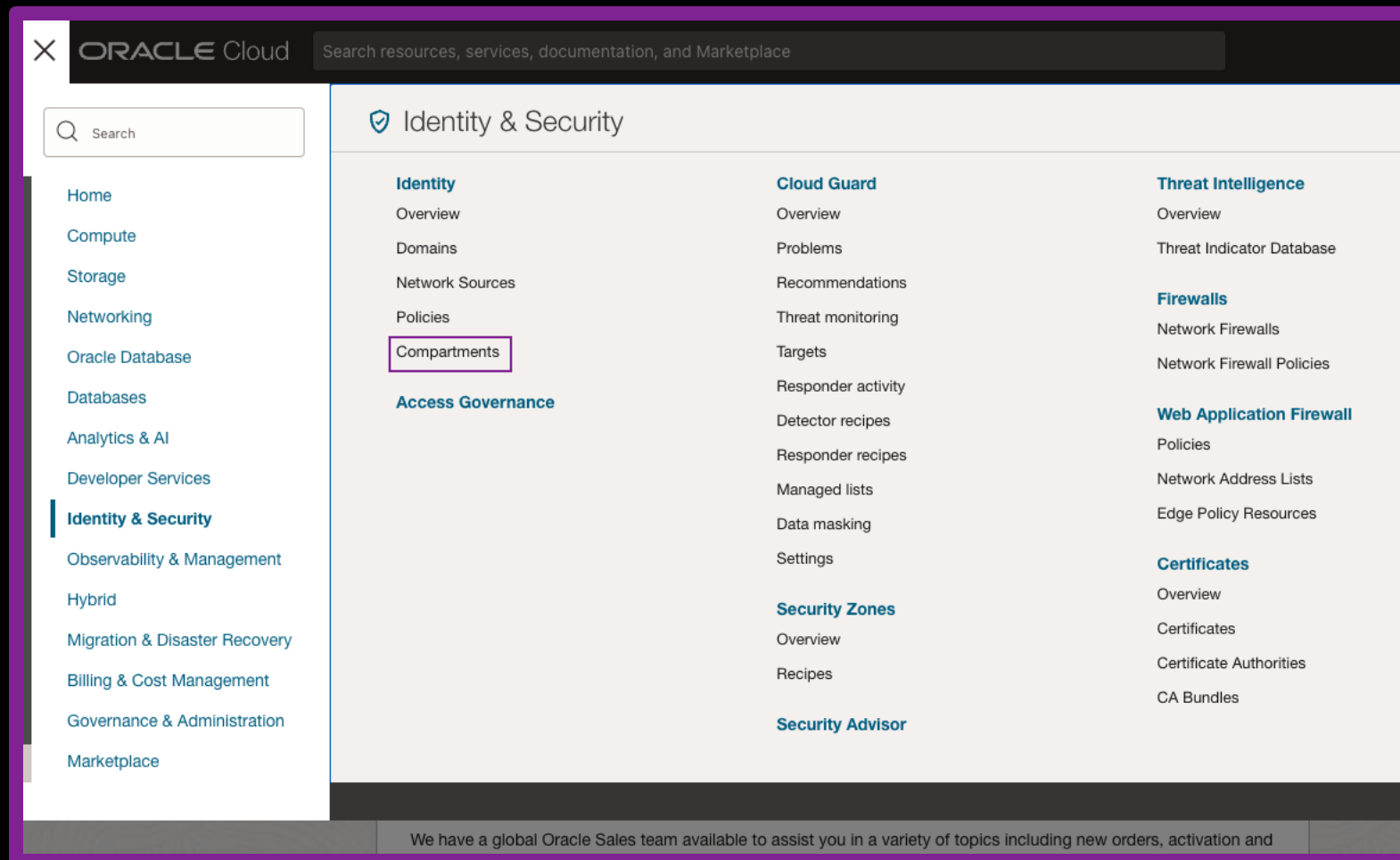
What do we need to use it? - OCI Set Up

Creating a compartment – what are compartments



What do we need to use it? - Compartments

Creating a compartment - How to



What do we need to use it? - Compartments

Creating a compartment - How to

The screenshot shows the Oracle Cloud console interface for the 'Compartments' section. On the left, there is a navigation menu with options: Overview, Domains, Network Sources, Policies, and Compartments (which is currently selected). Below the menu, there are filter options for 'State' (set to 'Active | Deleting') and 'Tag filters' (with 'add | clear' links and a note 'no tag filters applied').

The main content area is titled 'Compartments' and features a 'Create Compartment' button at the top left, which is highlighted with a red box. Below the button is a table listing existing compartments.

Name	Status	OCID	Authorized	Security Zone ⓘ	Subcompartments
faalneu	● Active	...lkjxja	Yes	-	2
ai_services_compartment	● Active	...bpxlxq	Yes	-	0
ManagedCompartmentForPaaS	● Active	...n4zvfq	Yes	-	0

What do we need to use it? - Compartments

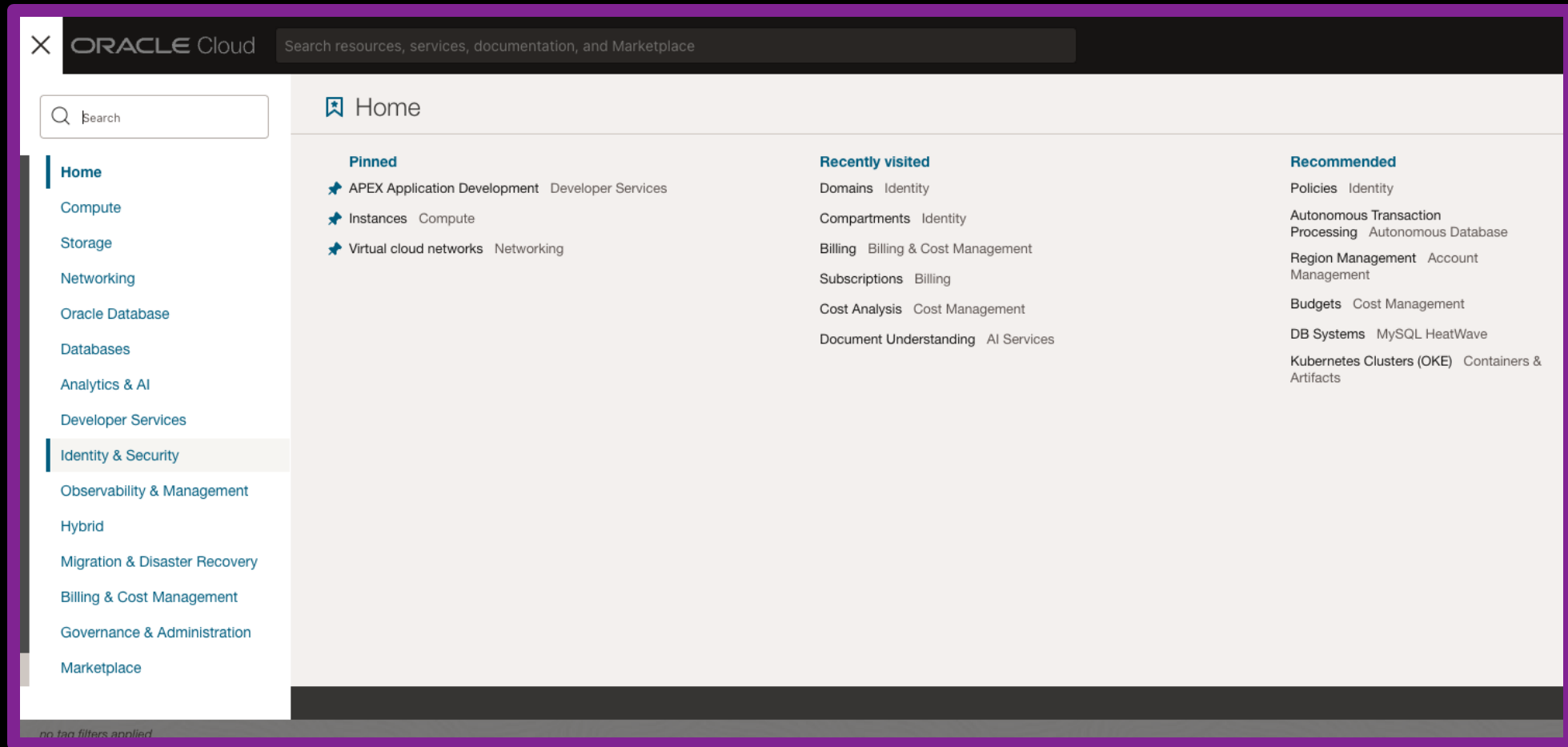
Creating a compartment - How to

The screenshot shows a 'Create Compartment' dialog box with the following fields and controls:

- Title:** Create Compartment (with a Help icon)
- Name:** A text input field.
- Description:** A text input field.
- Security Zone:** A dropdown menu with an information icon.
- Parent Compartment:** A dropdown menu showing 'faalneu (root)'.
- Tags:** A section with the text 'Add tags to organize your resources. [What can I do with tagging?](#)' and three input fields: 'Tag namespace' (set to 'None (add a free-form tag)'), 'Tag key', and 'Tag value' (with a close icon).
- Buttons:** 'Add tag' (bottom right), 'Create Compartment' (bottom left), and 'Cancel' (bottom left).

What do we need to use it? - Group

Creating a group



What do we need to use it? - Group

Creating a group

The screenshot shows the Oracle Cloud Identity console interface. At the top, there's a search bar and the Oracle Cloud logo. The breadcrumb trail indicates the current location: Identity > Domains > Default domain > Groups. The main heading is 'Groups in Default Domain'. Below this, there's a search bar with the placeholder text 'Search by group name or description.' To the left of the main content is a navigation sidebar with various options like Overview, Users, Groups (which is highlighted), Dynamic groups, Integrated applications, Oracle Cloud Services, Jobs, Reports, Security, Settings, Notifications, and Branding. Below the sidebar, there's a 'Tag filters' section with 'add' and 'clear' links, and a note that 'no tag filters applied'. The main content area features a 'Create group' button and a 'More actions' dropdown menu. Below these is a table with the following data:

<input type="checkbox"/>	Name	Description	Created
<input type="checkbox"/>	ai_services users	-	Fri, Apr 19, 2024, 20:00:39 UTC
<input type="checkbox"/>	All Domain Users	A group representing all users.	Fri, Nov 17, 2023, 12:58:51 UTC
<input type="checkbox"/>	Administrators	Administrators	Fri, Nov 17, 2023, 12:58:46 UTC

At the bottom of the table, it says '0 selected'.

What do we need to use it? - Group

Creating a group

ORACLE Cloud Search resources, services, documentation, and Marketplace Germany Central (Frankfurt)

Identity > Domains > Default domain > Groups

Identity domain **Groups in Default Domain**

Overview Search by group name or description.

Users

Groups Create group More actions

Dynamic groups

Integrated applications

Oracle Cloud Services

Jobs

Reports

Security

Settings

Notifications

Branding

Tag filters add | clear

no tag filters applied

Name

ai_services_users

All Domain Users

Administrators

0 selected

Create group

Name

Required

Description

User can request access

Users *Optional*
Select users to assign this group.

Search by user name, first name, last name, or email address

<input type="checkbox"/>	First name	Last name	Email
<input type="checkbox"/>	Fabian	Neureiter	fa.al.neu@gmail.com

0 selected Showing

[Show advanced options](#)

Create Cancel

What do need to use it?- Group

Using Domains– Good Practice

- Learn from my mistake, **don't** create the group in the default domain
- Create a separate domain for everything not administration related
- For more information:

<https://blogs.oracle.com/ateam/post/oci-iam-identity-domains-best-practices>

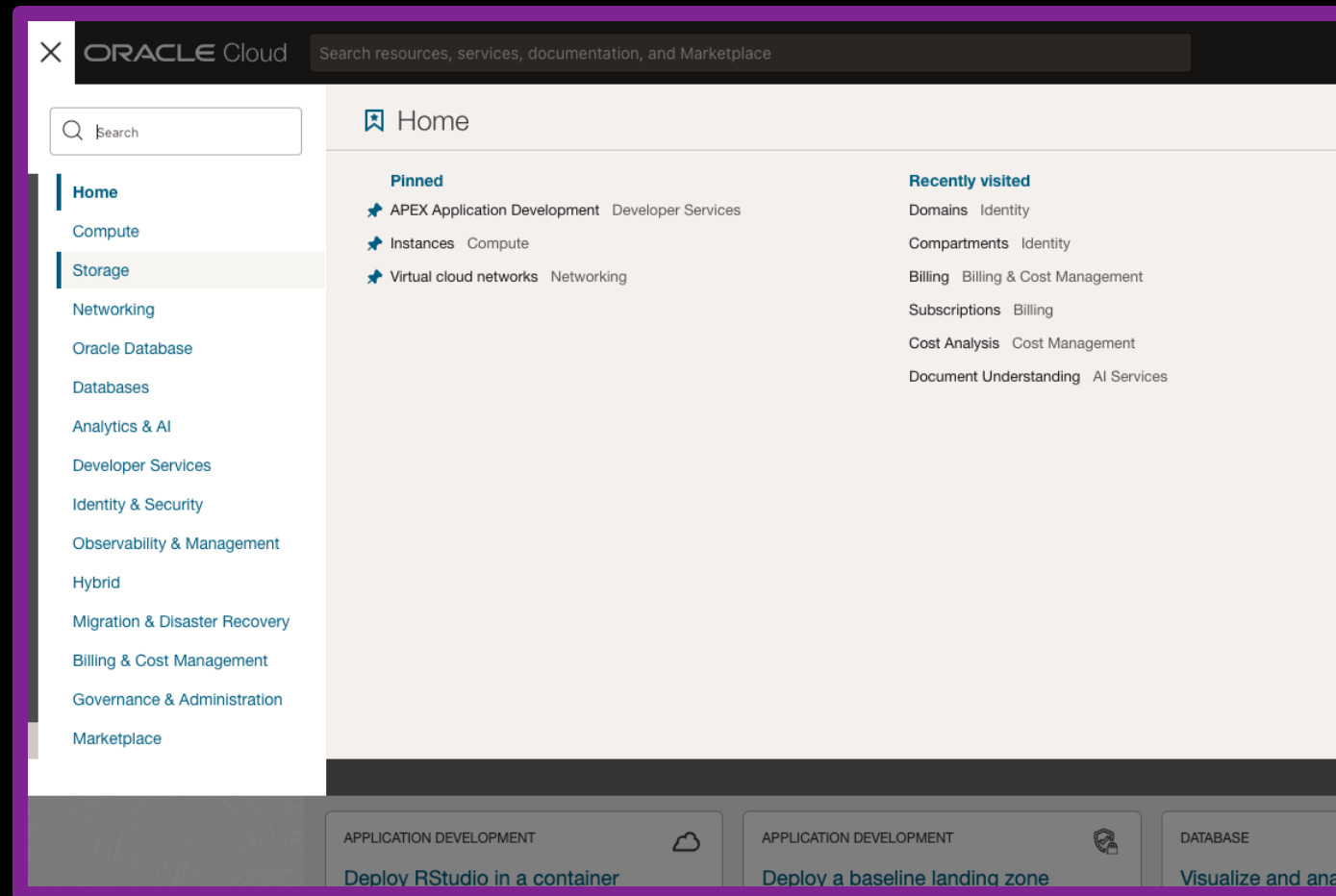
What do we need to use it?- Buckets

Creating Buckets in Object Storage

- Used for:
 - Storing documents we want to process
 - The output of document analysis

What do we need to use it? - Buckets

Creating Buckets in Object Storage



What do we need to use it? - Buckets

Creating Buckets in Object Storage

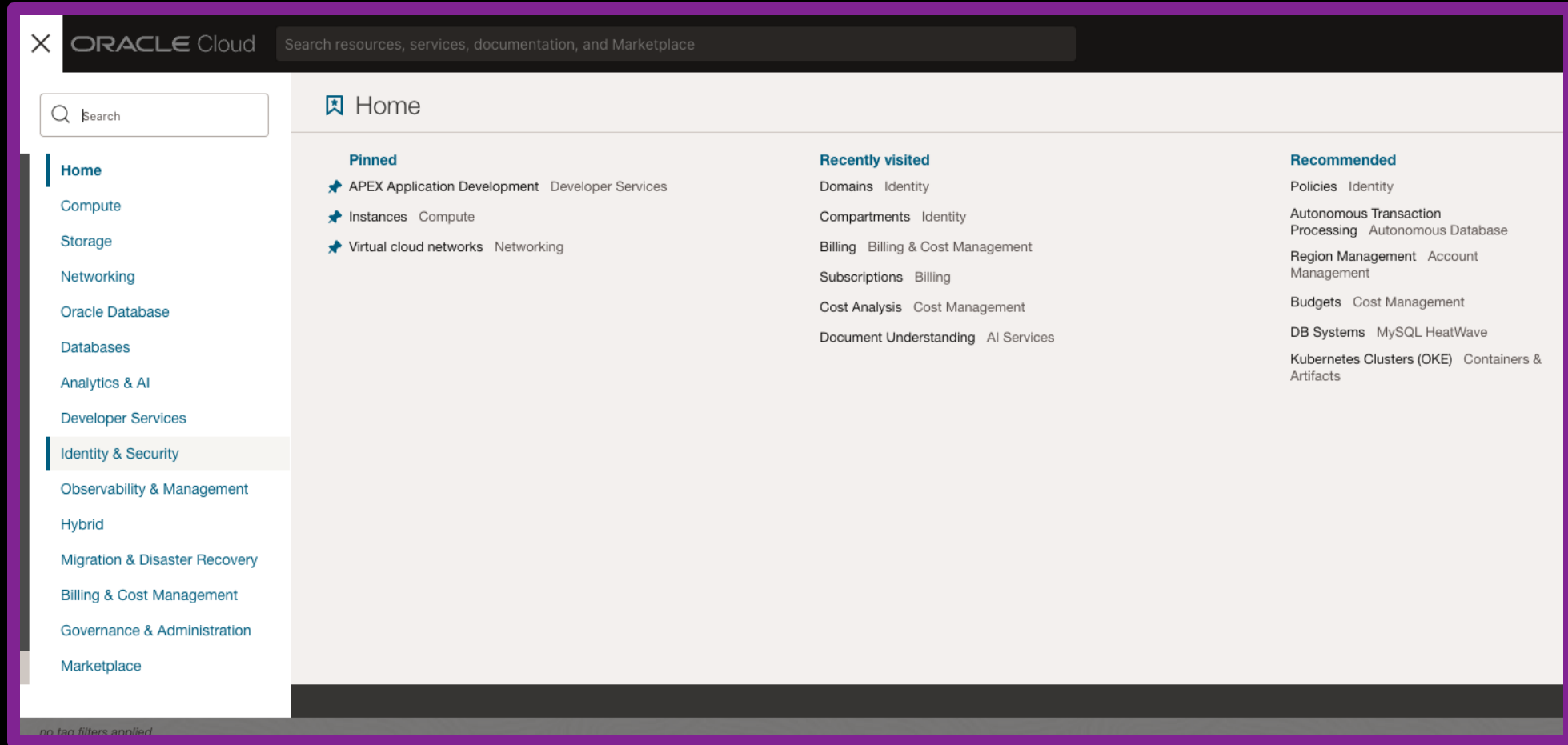
The screenshot displays the Oracle Cloud console interface for creating a new bucket. The main page in the background is titled "Buckets in ai_services_comp" and shows a list of existing buckets: "document_analysis_output" and "documents_input". A "Create Bucket" button is visible in the top right of this page. The "Create Bucket" dialog box is open, showing the following configuration:

- Bucket Name:** bucket-20240421-1310
- Default Storage Tier:** Standard (selected), Archive (unselected)
- Enable Auto-Tiering:** Unchecked
- Enable Object Versioning:** Unchecked
- Emit Object Events:** Unchecked
- Uncommitted Multipart Uploads Cleanup:** Unchecked
- Encryption:** Encrypt using Oracle managed keys (selected), Encrypt using customer-managed keys (unselected)
- Resource logging:** Resource logging disabled (toggle switch)

At the bottom of the dialog, there are "Create" and "Cancel" buttons. The footer of the console shows "Terms of Use and Privacy" on the left and "Copyright © 2024, Oracle and/or its affiliates. All rights reserved." on the right.

What do we need to use it? - Policies

Set up policies



What do we need to use it? - Policies

Set up policies

The screenshot displays the Oracle Cloud console interface for a policy. At the top, the Oracle Cloud logo and a search bar are visible. The breadcrumb navigation shows 'Identity > Policies > Policy Details'. The main content area features a large green circle with a white 'P' representing the policy, with the status 'ACTIVE' below it. To the right of the circle are buttons for 'Edit Policy', 'Add tags', and 'Delete'. Below these buttons are two tabs: 'Policy Information' (selected) and 'Tags'. The 'Policy Information' tab contains the following details: OCID: ...msp5ctda (with 'Show' and 'Copy' links), Compartment: faalneu (root), Description: policy for things related to document understanding, and Created: Fri, Apr 19, 2024, 20:15:46 UTC. Below the policy information is a 'Resources' section with a sub-section for 'Statements'. The 'Statements' section has an 'Edit Policy Statements' button and lists three statements: 'allow group ai_services_users to use ai-service-document-family in tenancy', 'allow group ai_services_users to use object-family in compartment ai_services_compartment', and 'allow group ai_services_users to manage object-family in compartment ai_services_compartment'.

How can we use it ?

Ways of using the document understanding service

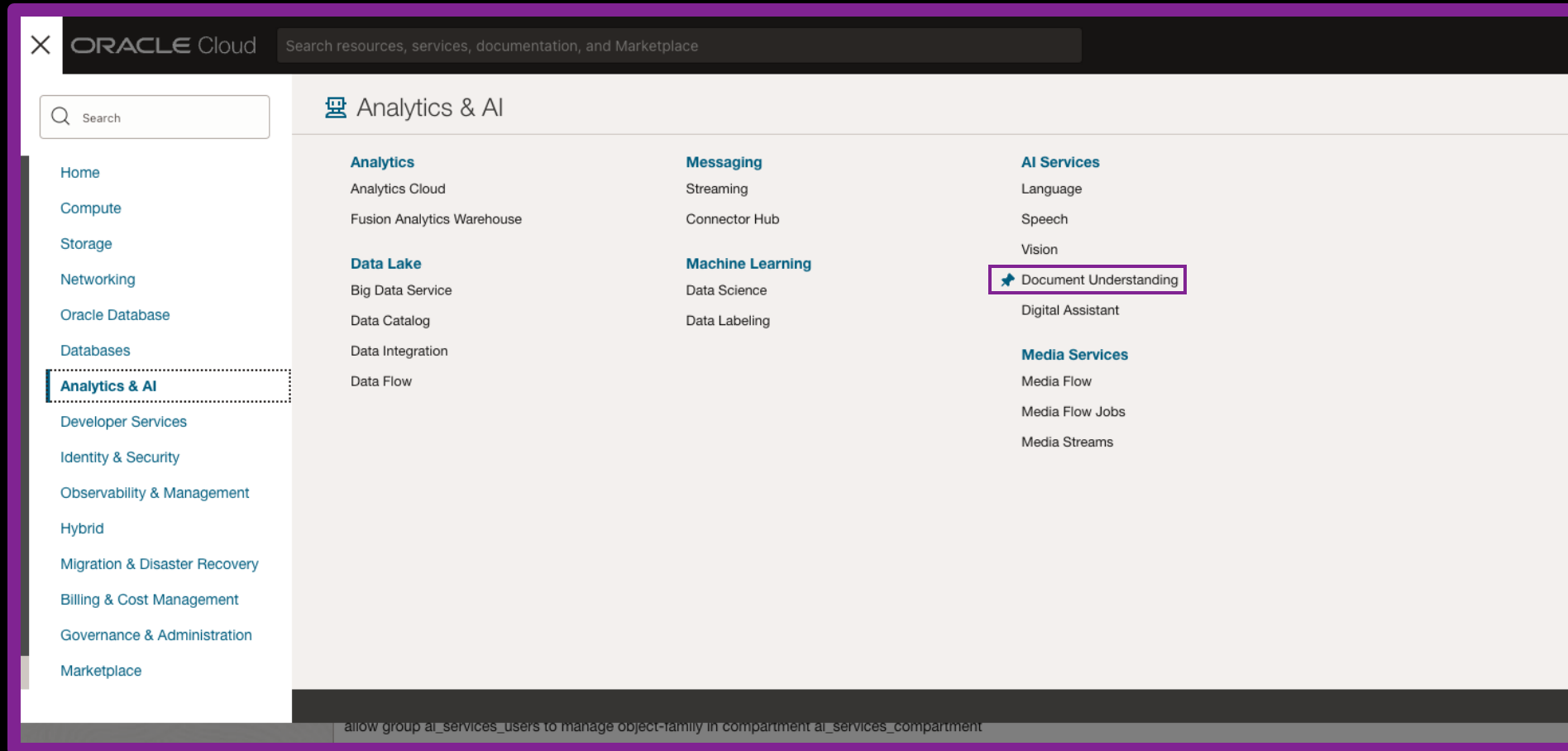
How can we use it?- Ways of using the document understanding service

Ways of using the document understanding service

- OCI UI/Cloud Console
- CLI
- SDKs for various languages
- REST API

How can we use it?- Ways of using the document understanding service

OCI UI / Cloud Console



How can we use it?- Ways of using the document understanding service

OCI UI / Cloud Console

The screenshot displays the OCI UI Document Classification interface. On the left, a sidebar contains navigation options: Overview, Text extraction, Table extraction, Key value extraction, Document classification (selected), Custom models, Projects, and Model scope. The main area is titled 'Document classification' and includes a description: 'Categorize a document as a predefined type such as resume, invoice, or receipt'. Below this, the 'Document source' section has radio buttons for 'Demo files' (selected), 'Local files', and 'Object storage'. There are two buttons: 'Demo files: Statement' and 'Demo files: Receipt'. The central part of the interface shows a preview of a document, which is a bank statement from '1 THIS FIRST BANK'. The document text includes: 'MANDARIN BRANCH, 4444 THIS STREET, ANYTOWN, STATE 00000-0000', 'CUSTOMER SERVICE 24 HOURS A DAY, 888-000-0000', 'JOHN Q. CUSTOMER, 1234 MAIN STREET, ANYTOWN, STATE 00000-0000', 'ACCOUNT 12345-678910, STATEMENT PERIOD 1-1-2000 TO 2-1-2000', and a table with columns 'CHECKING' and 'SAVINGS'. The 'CHECKING' row shows a 'BEGINNING BALANCE' of 500.000. On the right, the 'Results' panel shows a table with 'Label' and 'Confidence' columns. The results are: 'BANK STATEMENT' (100.00%), 'OTHERS' (0.00%), 'INVOICE' (0.00%), 'PAYSLIP' (0.00%), and 'RESUME' (0.00%). Below the table are expandable sections for 'Request' and 'Response'.

Document Understanding

Document classification

Categorize a document as a predefined type such as resume, invoice, or receipt

Document source

Demo files Local files Object storage

Demo files: Statement Demo files: Receipt

Results ⓘ

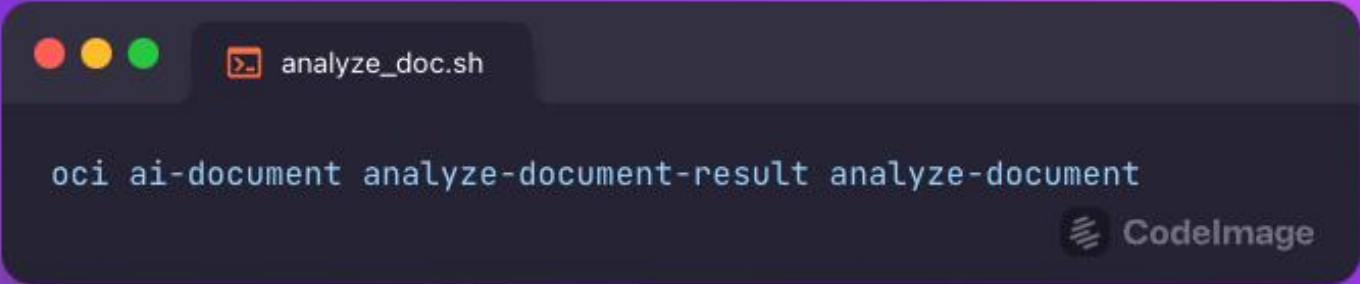
Label	Confidence
BANK STATEMENT	100.00%
OTHERS	0.00%
INVOICE	0.00%
PAYSLIP	0.00%
RESUME	0.00%

► Request

► Response

How can we use it?- Ways of using the document understanding service

CLI – Command Line Interface



```
analyze_doc.sh  
oci ai-document analyze-document-result analyze-document
```

The image shows a terminal window with a dark background. The window title is 'analyze_doc.sh'. The command 'oci ai-document analyze-document-result analyze-document' is entered. The terminal has standard window control buttons (red, yellow, green) and a 'CodeImage' logo in the bottom right corner.

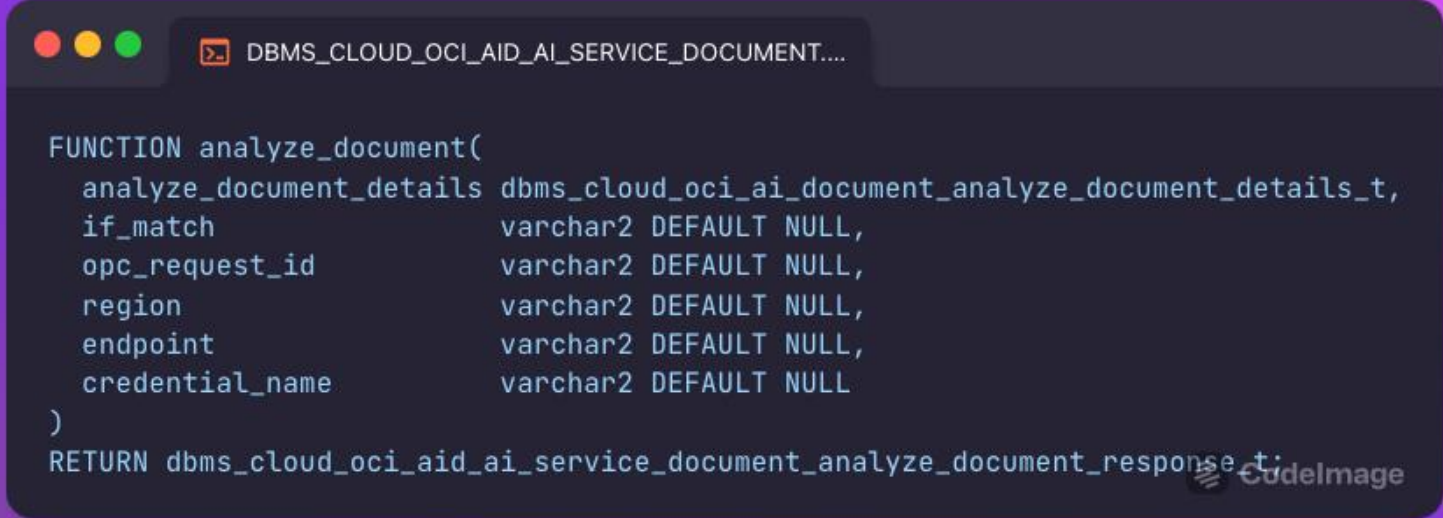
How can we use it?- Ways of using the document understanding service

Various SDKs (Software Development Kits)

- Java
- Python
- JavaScript and Typescript
- .NET
- Go
- Ruby
- PL/SQL

How can we use it?- Ways of using the document understanding service

Various SDKs



```
FUNCTION analyze_document(  
  analyze_document_details dbms_cloud_oci_ai_document_analyze_document_details_t,  
  if_match                 varchar2 DEFAULT NULL,  
  opc_request_id          varchar2 DEFAULT NULL,  
  region                  varchar2 DEFAULT NULL,  
  endpoint                 varchar2 DEFAULT NULL,  
  credential_name         varchar2 DEFAULT NULL  
)  
RETURN dbms_cloud_oci_aid_ai_service_document_analyze_document_response_t;
```

How can we use it?- Ways of using the document understanding service

REST API

The screenshot shows the REST API documentation for the `AnalyzeDocument` endpoint. On the left is a navigation menu with various API categories, and on the right is the main content area for the endpoint.

AnalyzeDocument AISERVICEDOCUMENT

POST `/20221109/actions/analyzeDocument`

Perform different types of document analysis.

Request

AnalyzeDocument

Parameters

Name	Where	Description
if-match	header	<ul style="list-style-type: none">Required: noType: string <p>For optimistic concurrency control. In the PUT or DELETE call for a resource, set the <code>if-match</code> parameter to the value of the etag from a previous GET or POST response for that resource. The resource will be updated or deleted only if the etag you provide matches the resource's current etag value.</p>
opc-request-id	header	<ul style="list-style-type: none">Required: noType: string <p>The client request ID for tracing.</p>

Body

The Document Understanding REST API

A closer look

Synchronous

- Make **POST** Request to the **analyzeDocument** Endpoint with the document attached
- Directly receive response with the result of the analysis

Asynchronous

- Make **POST** Request to the **createProcessorJob** Endpoint with the document attached or an object storage location of the document
- Use GET Requests to **GetProcessorJob** to query the status of the Processorjob
- Retrieve Results via the **Object Storage Service API**

The Document Understanding REST API – What do we need?

Generate API Keys

The screenshot displays the Oracle Cloud dashboard for the 'faalneu' tenancy in the Germany Central (Frankfurt) region. The interface is organized into several sections:

- Service links:** A grid of three boxes containing categorized links. The 'PINNED' box lists 'Document Understanding AI Services', 'APEX Application Development Developer Services', 'Instances Compute', and 'Virtual cloud networks Networking'. The 'RECENTLY VISITED' box lists 'Identity Identity & Security', 'Policies Identity', 'Buckets Object Storage & Archive Storage', 'Domains Identity', 'Compartments Identity', and 'Billing Billing & Cost Management'. The 'RECOMMENDED' box lists 'Overview Identity', 'Dedicated Virtual Machine Hosts Compute', 'Autonomous Transaction Processing Autonomous Database', 'Logging Logging', 'Kubernetes Clusters (OKE) Containers & Artifacts', and 'Region Management Account Management'.
- Quickstarts:** A grid of six cards for guided tutorials. The 'FEATURED' card is 'Predict the result of the next race' (25-30 mins). Other cards include 'Deploy a WordPress website' (6-8 mins), 'Deploy a low-code app on Autonomous Database using APEX' (3-5 mins), 'Deploy RStudio in a container' (10-12 mins), 'Deploy a baseline landing zone' (7-9 mins), and 'Visualize and analyze Strava data on Autonomous Database' (2-4 mins).
- Usage and Profile:** A right-hand sidebar showing 'All services operational', 'Usage' (€0.00, 20 of 30 days elapsed), 'Cost savings opportunities' (€0.00), and a 'Profile' section with user details and navigation options like 'My profile', 'Service user Console', and 'Sign out'.

Generate API Keys

The screenshot shows the Oracle Cloud Identity console for user Fabian Neureiter. The user profile is active and includes fields for OCID, Username, Email, and various contact information. The API keys section is currently empty, with a table header showing columns for Fingerprint and Created. A red box highlights the 'Add API key' button in the API keys section.

User Profile:

- Name:** Fabian Neureiter
- Status:** ACTIVE
- OCID:** ...xq4d6q
- Username:** fa.al.neu@gmail.com
- Email:** fa.al.neu@gmail.com
- First name:** Fabian
- Last name:** Neureiter

API keys section:

Fingerprint	Created
No items found.	

0 selected

Generate API Keys

ORACLE Cloud Search resources, services, documentation, and Marketplace Germany Central (Frankfurt)

Identity > My profile > API keys

Fabian Neureiter

ACTIVE

Edit my profile Change password Link support

User information Tags Capabilities

OCID: ...xq4d6q Show Copy
Username: fa.al.neu@gmail.com
Prefix: -
First name: Fabian
Middle name: -
Last name: Neureiter
Suffix: -

User preferences
Work information
Other information

API keys

Add API key Delete

Fingerprint

0 selected

Add API key

Note: An API key is an RSA key pair in PEM format used for signing API requests. You can generate the key pair here and download the private key. If you already have a key pair, you can choose to upload or paste your public key file instead. [Learn more](#)

Generate API key pair Choose public key file Paste a public key

Public key

i Download the private key. It will not be shown again. After you download it, [change the file permissions](#) so only you can view it

[Download private key](#) [Download public key](#)

Add Cancel

Generate API Keys

Configuration file preview Help

Note: This configuration file snippet includes the basic authentication information you'll need to use the SDK, CLI, or other OCI developer tool. Paste the contents of the text box into your `~/.oci/config` file and update the `key_file` parameter with the file path to your private key. [Learn more](#)

Select API key fingerprint

ef: [REDACTED]

Configuration file preview *Read-only*

```
[DEFAULT]
user=ocid1.user.oc1.[REDACTED]
fingerprint=ef:[REDACTED]
tenancy=ocid1.tenancy.[REDACTED]
region=eu-frankfurt-1
key_file=<path to your private keyfile> # TODO
```

[Copy](#)

Paste the contents of the text box into your `~/.oci/config` file.

[Close](#)

LIVE Demo

Using the API with APEX

(Current) limits of the service

(Current) Limits of the service

Biggest and most significant drawback

- Currently, no languages other than English are supported (!)
- Sadly makes OCI Document Understanding not usable for our Use Case



https://www.reddit.com/r/memes/comments/z6bsm1/germany_sad/

Remedies

Modify the existing models through training

The screenshot shows the Oracle Cloud Data Labeling interface for a document titled "Add labels: 0642658212.pdf". The document is a German invoice from HAUFE. The interface includes a "Summary" panel on the left, a "Labels (2)" panel on the right, and a "Content body" area in the center. The invoice text is annotated with labels for various fields.

Summary Panel:

- Select Labels...
- invoices: MT AG Frau Ilka Lappe Balcke-Drr-Allee 9 40882 Ratingen

Labels (2) Panel:

- Search label
- total
- invoice

Info Panel:

- Text : Ratingen
- Label : invoice
- OCR confidence : 99.82%

Document Content:

HAUFE.

Haufe/Service Center GmbH, Lohrstr. 17, 79111 Freiburg

Bestellung & Lieferung
 Internet: www.haufe.de
 E-Mail: service@haufe.de
 Telefon: 03601 501 50 (44 St.) (kostenlos)

Kita (Anzahl) (Preis) (Grund) (um) (netto) (Kundenkonto)
 Komma | Sim | gpx | ein | fact | online | durch | führen |
 www.haufe.de/meinkonto

** 642658212 **

MT AG
 Frau Ilka Lappe
 Balcke-Drr-Allee 9
 40882 Ratingen

Rechnung

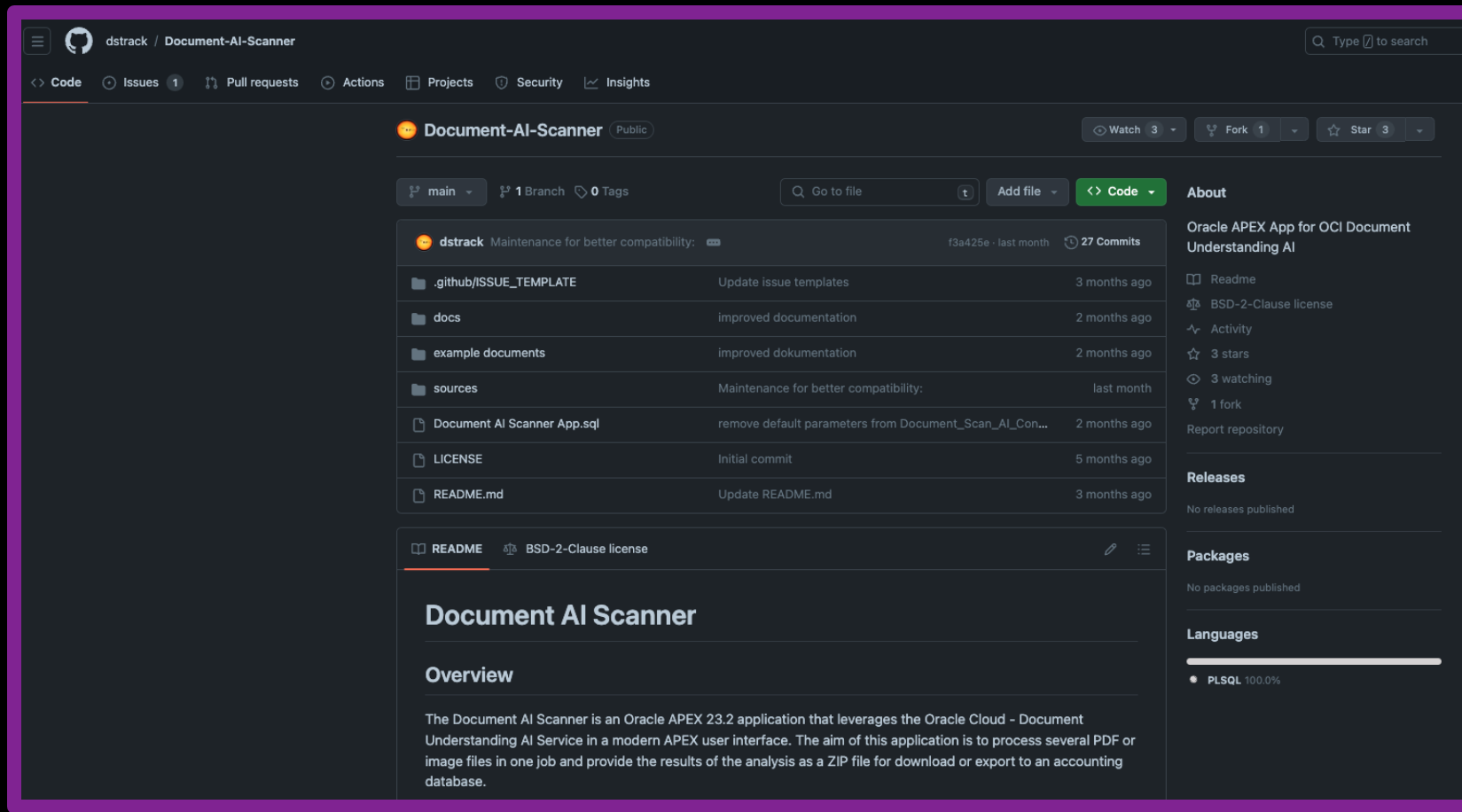
Ihre Rechnung

Kundennummer: 97259893 Rechnungsummer: 0642658212 Rechnungs-Lieferdatum: 24.02.2020

Soll bei Zahlung oder Zuschritt unbedingt lanseben

Menge	Material-Nr. Auftrags-Nr.	Titel-Beschreibung	Einzelpreis EUR inkl. MwSt.	Gesamt EUR inkl. MwSt.	Einzelpreis EUR inkl. MwSt.	Gesamt EUR inkl. MwSt.
1	04290-0051 222934158	[REDACTED]	25,14	1.761,17%	26,90	26,90

Workaround by Dirk Strack



Using other Service Providers

- Azure Document Intelligence
 - <https://learn.microsoft.com/de-de/azure/ai-services/document-intelligence/overview?view=doc-intel-3.1.0>
- Amazon Textract
 - <https://aws.amazon.com/de/textract/>
- UI Path
 - <https://www.uipath.com/product/document-understanding>

A couple of things to think about

Things to keep in mind when using any AI service

- Cost
- Needed Features
- What happens to the uploaded data?

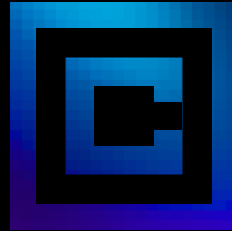
Useful Resources

Useful Resources

- How To and sample app from Oracle:
 - <https://blogs.oracle.com/apex/post/automate-invoice-handling-by-integrating-your-oracle-apex-app-with-oci-document-understanding>
- Service Overview:
 - <https://docs.oracle.com/en-us/iaas/Content/document-understanding/using/home.htm>
- REST API Reference:
 - <https://docs.oracle.com/en-us/iaas/api/#/en/document-understanding/20221109/>
- Document AI Scanner by Dirk Strack
 - <https://github.com/dstrack/Document-AI-Scanner>

Say Hy_

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