



Open Source - An exploration

Seminar Series Presentation

Group 18

March 2024

Open
Source





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1 What is Open-Source?

1. What is Open-Source?

2. Benefits & Downsides

3. Case Study

4. How can I contribute to a project?



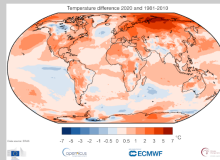
Definition of Open Source

1 What is Open-Source?

So much more than software!



PUBLIC LIBRARY
of SCIENCE





Key Characteristics

1 What is Open-Source?

- Transparency
- Collaboration
- Community-driven Development
- Innovation and Iteration
- Freedom to Use and Modify
- Licensing



Licensing

1 What is Open-Source?

Copyleft licenses



Free as in Freedom



Free as in Freedom



Free as in Freedom



Permissive licenses

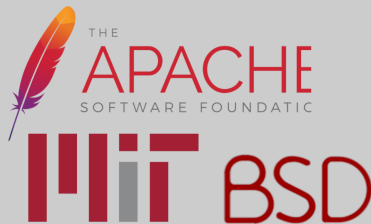




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2 Benefits & Downsides

1. What is Open-Source?

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Pro&Con Table

2 Benefits & Downsides

Pros	Cons
<ul style="list-style-type: none">▶ Transparency▶ Community collaboration▶ Customization▶ Cost-Effective▶ Innovation and rapid development<ul style="list-style-type: none">▶ Vendor Independence▶ Learning Opportunities▶ Ethical Considerations	<ul style="list-style-type: none">▶ Lack of Support▶ Fragmentation▶ Perceived Lack of Accountability

Table 1: Pros and Cons



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3 Case Study

1. What is Open-Source?

2. Benefits & Downsides

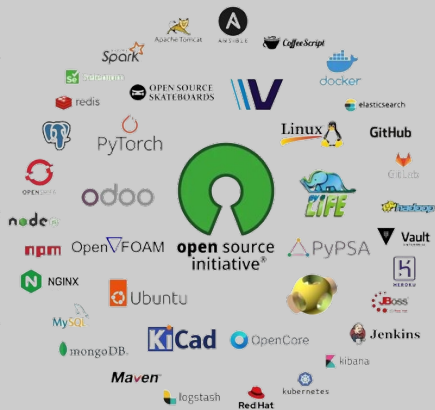
3. Case Study

4. How can I contribute to a project?



Open Source Projects

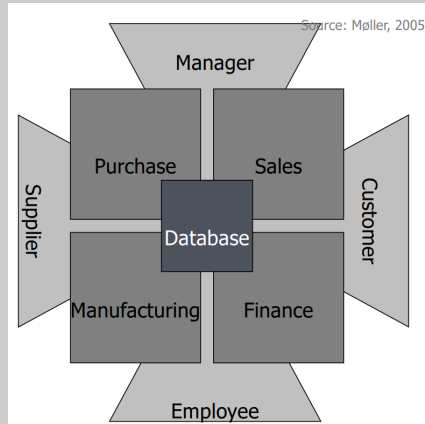
3 Case Study





Enterprise Resource Planning Systems

3 Case Study





SAP

3 Case Study

Diagram illustrating the SAP interface for displaying a Standard Order (117) Overview. The interface is annotated with labels for various components:

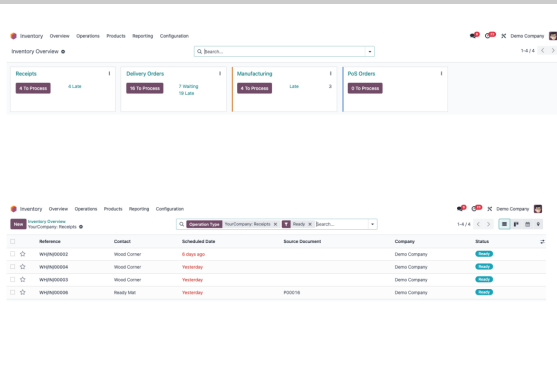
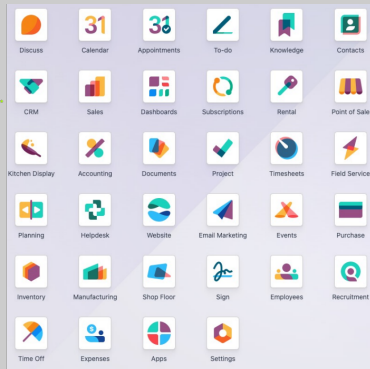
- Menu bar:** Sales document, Edit, Goto, Extras, Environment, System, Help.
- Title bar:** Display Standard Order 117: Overview.
- Command field:** Input field for commands.
- Standard toolbar:** Icons for document flow, status overview, sales summary, sold-to party, and orders.
- Application toolbar:** Icons for document flow, status overview, sales summary, sold-to party, and orders.
- User options button:** Button for user options.
- Field name:** Sales area 0102 / 10 / 20, Sales grp, Sales off.
- Input field:** Sold-to party 100578, Houghton Chemical Corp / Allston MA 02134.
- Drop-down list button:** Ship-to party 100578002, Houghton Chemical Corp / 30 Amor Avenue / Carlstadt.
- Page tabs:** Sales, Item overview, Item detail, Ordering party, Procurement, Shipping, Reason for rejection.
- General header data:**
 - Sales doc type: OR Standard Order
 - Delivery prior: 2
 - Contact person: ATTN: QUALITY
 - Cont. tel.
 - Req. deliv. date: 09/24/2002
 - Total weight: 45,311.375 KG
 - Payment terms: L030 NET 30 DAYS INVO.
 - Incoterms: FOB Destination
 - Shp. Cond.: 90 CPU or Arranged
 - Title Transfer
- Worksheet:** Table showing items with columns: Item, Material, Description, Customer material no., Order quantity, SU, First date, S, PO details.
- Row selection button:** Buttons for adding items (add).
- Status bar:** VA03, hoesag71, INS.

Item	Material	Description	Customer material no.	Order quantity	SU	First date	S	PO details
10 add	5017236	TOLUENE BT BULK ST.		2,500.000	SAL	09/24/2002		otc 082
20 add	5019063	XYLENE BT BULK STD		4,000.000	SAL	09/24/2002		otc 082
30 add	5017236	TOLUENE BT BULK ST.		45,000	LB	09/25/2002		otc 082



Odoo

3 Case Study





Odoo Pros and cons

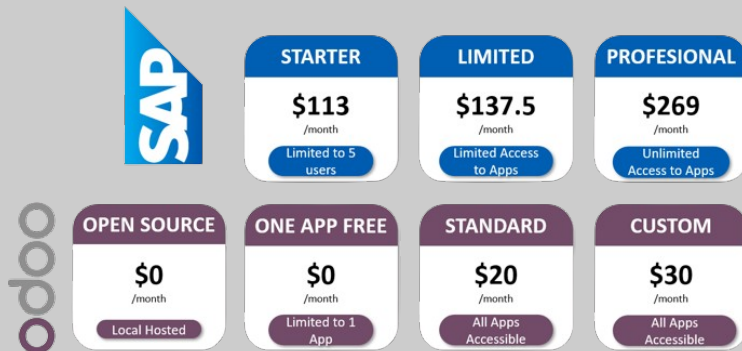
3 Case Study

Pros	Cons
<ul style="list-style-type: none">▶ Transparency▶ Community collaboration▶ Customization▶ Cost-Effective▶ Innovation and rapid development▶ Vendor Independence▶ Learning Opportunities	<ul style="list-style-type: none">▶ Lack of Support▶ Fragmentation <p>Perceived Lack of Accountability</p>



Price Comparison

3 Case Study





What is TensorFlow? (I)

3 Case Study

- Platform for machine learning
 - Machine learning library
- Free and open source
 - License: Apache license 2.0
 - Initially from Google





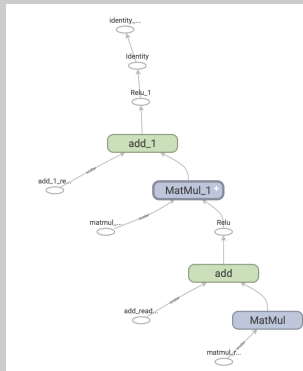
What is TensorFlow? (II)

3 Case Study

- Data flow graphs
 - ML algorithms as a graph of connected operations
 - Quick and intuitive work flow
- Works with Python, C++ etc.
- Visualization of work by TensorBoard

```
import random
import numpy as np
import tensorflow as tf
from tensorflow import keras
from sklearn.model_selection import train_test_split
```

Source: Udacity, Inc.



Source: tensorflow.org



What is TensorFlow? (III)

3 Case Study

- Natural language processing
- Image recognition
- Computational-based simulations
- Training and execution on GPUs, CPUs or TPUs (Cloud)



Source: tensorflow.org



Tensor flow: Open-source characteristics

3 Case Study

- Google as contributor **and** promoter
 - Part of Googles business model
- Network of collaborators
- Beyond source code: Sharing of models and datasets



Tensor flow: Google's perspective

3 Case Study



- Google developed closed code until 2015
- Google's AI products use TensorFlow
- (Worldwide) collaboration - exposure
- More users, potential profit
 - Google's cloud-TPUs



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1. What is Open-Source?

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4. How can I contribute to a project?



Short answer

4 How can I contribute to a project?





A quick example

4 How can I contribute to a project?

- Suppose you want to **contribute** to a project which is currently working fine



A quick example

4 How can I contribute to a project?

- Suppose you want to **contribute** to a project which is currently working fine
- And you want to make a change **without breaking anything...**



A quick example

4 How can I contribute to a project?

- You could use some Cloud Based service and copy your folder and files



project



project_1



project_2



A quick example

4 How can I contribute to a project?

- And find yourself with a real mess...





What is git?

4 How can I contribute to a project?

- **Version Control Software** - such as Autodesk Vault



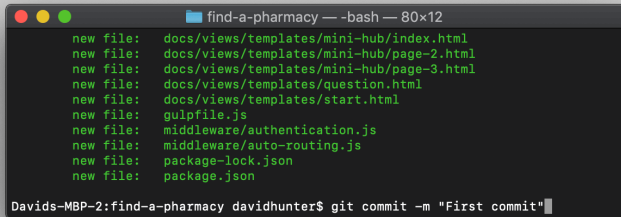
AUTODESK® VAULT



What is git?

4 How can I contribute to a project?

- How can I actually use it?



```
find-a-pharmacy — -bash — 80x12
new file: docs/views/templates/mini-hub/index.html
new file: docs/views/templates/mini-hub/page-2.html
new file: docs/views/templates/mini-hub/page-3.html
new file: docs/views/templates/question.html
new file: docs/views/templates/start.html
new file: gulpfile.js
new file: middleware/authentication.js
new file: middleware/auto-routing.js
new file: package-lock.json
new file: package.json
Davids-MBP-2:find-a-pharmacy davidhunter$ git commit -m "First commit"
```

Figure 1: Terminal commands



What is git?

4 How can I contribute to a project?

- How can I actually use it?

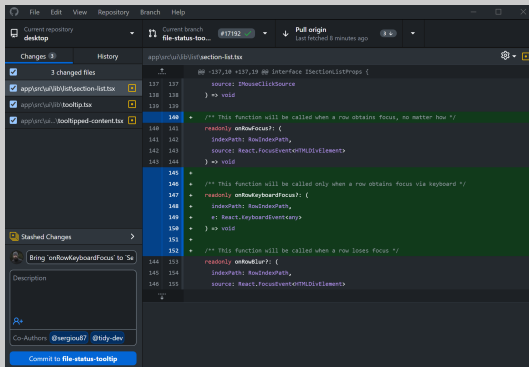


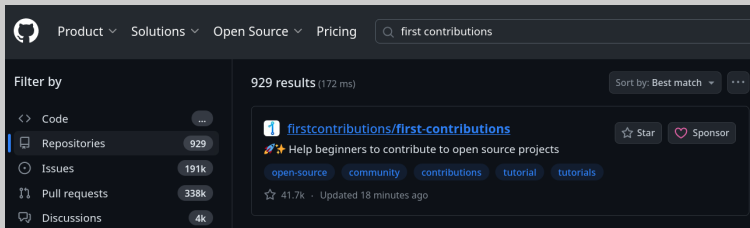
Figure 2: Graphical User Interface



A practical guide

4 How can I contribute to a project?

1. Create a GitHub Account
2. Search for the first-contributions project





A practical guide

4 How can I contribute to a project?

What are the first files that you should look for in a project?

- **README.md:**
 - Project landing page.
 - Goals, purpose, how to start, and additional info.



A practical guide

4 How can I contribute to a project?

What are the first files that you should look for in a project?

- **contributing.md:**
 - Details contributions sought by maintainers.
 - Process for submitting changes or getting involved.



A practical guide

4 How can I contribute to a project?

What are the first files that you should look for in a project?

- **Code of Conduct (CoC):**

- Guidelines for community interaction.
- Lists unacceptable behaviors and reporting mechanisms.
- Indicates positive behaviors encouraged by maintainers.



A practical guide

4 How can I contribute to a project?

What are the first files that you should look for in a project?

- **license.txt:**
 - Specifies open source license.
 - Contains full license text.
 - Essential for understanding usage, modification, and enhancement permissions.



A practical guide

4 How can I contribute to a project?

1. GitHub Account - Done



A practical guide

4 How can I contribute to a project?

1. GitHub Account - Done
2. Find the project page - Done



A practical guide

4 How can I contribute to a project?

1. GitHub Account - Done
2. Find the project page - Done
3. Follow the step by step guide and start contributing



Open Source - An exploration

Thank you

