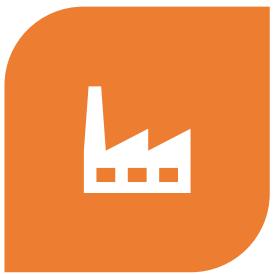


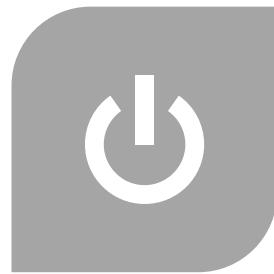
Open Source Platform

20230305

Menu



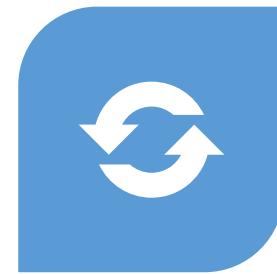
OPEN SOURCE
PLATFORM



OPEN SOURCE



HOW TO DO
OPEN SOURCE



OPEN SOURCE
ACTIVITIES

“Software”

- Software is a series of computer data and instructions organized in a specific order, and is a non-tangible part of a computer.

- Refer : <https://zh.m.wikipedia.org/zh-hans/软件>

```
import os
#https://stackoverflow.com/questions/1676835/how-to-get-a-reference-to-a-module-inside-the-module-itself
import sys
self = sys.modules[__name__]

#Command line control
import argparse
parser = argparse.ArgumentParser()
parser.add_argument("-p", "--profile", help="Specific A profile to start with", default = None)
args = parser.parse_args()

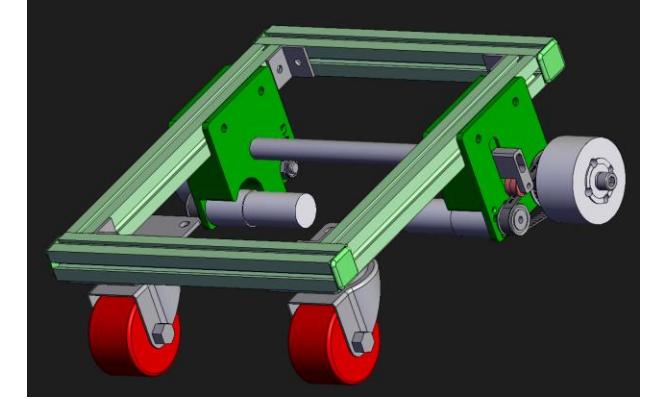
#Start FMCV Module
from FMCV import Util
from FMCV import Cv
from FMCV import Config
Config.init(self)

from FMCV import Profile
Profile.init(self)

from FMCV import Process
Process.init(self)

from FMCV.Ai import CNN
CNN.init(self)

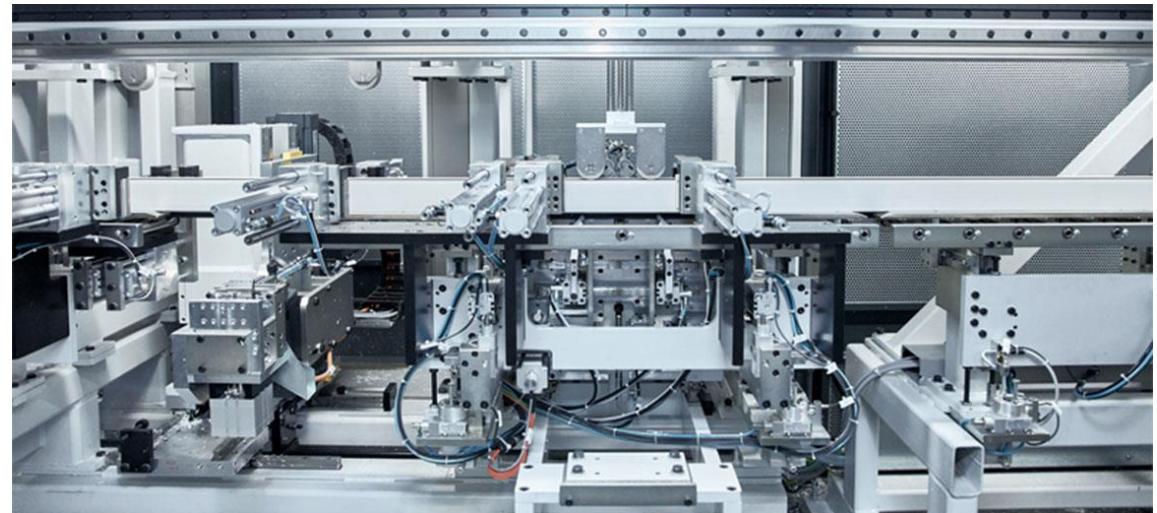
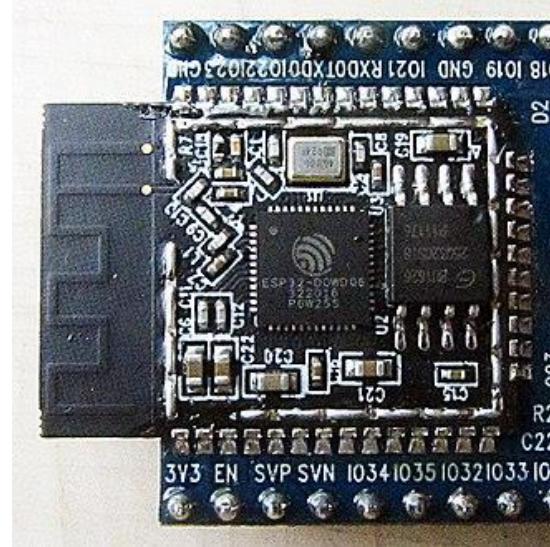
from FMCV.Si import ActionUi
ActionUi.init(self)
```



“Computer hardware”

- Computer hardware, often referred to simply as hardware, is the physical device of a computer.

- Refer : <https://zh.m.wikipedia.org/zh-my/计算机硬件>



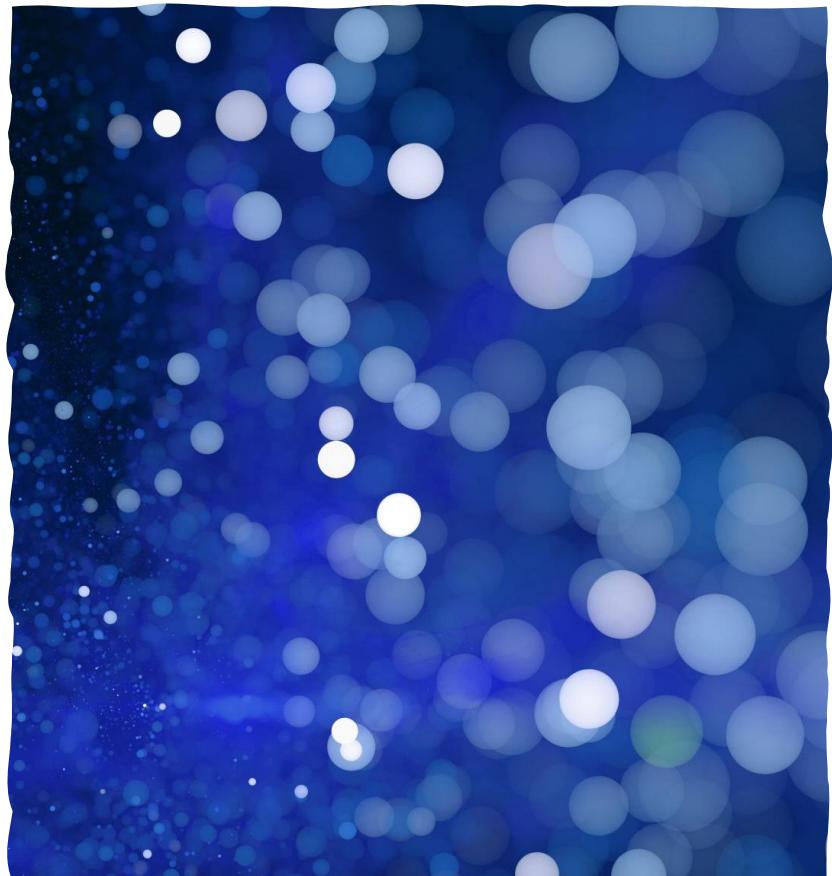
Contrast

Monopoly vs Eco-system

Applied talents vs Creative talents

Behind closed doors vs cross-disciplinary collaboration

Opportunity



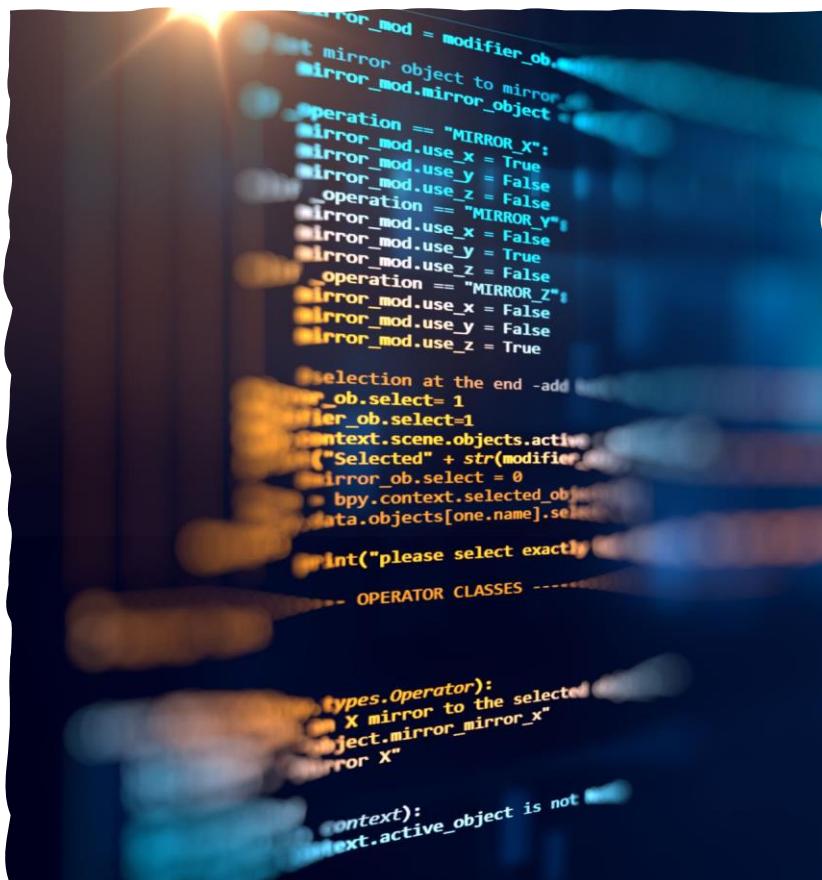
The hardware cannot be replicated
and needs to be remanufactured

The qualities of software –
"copy and paste"

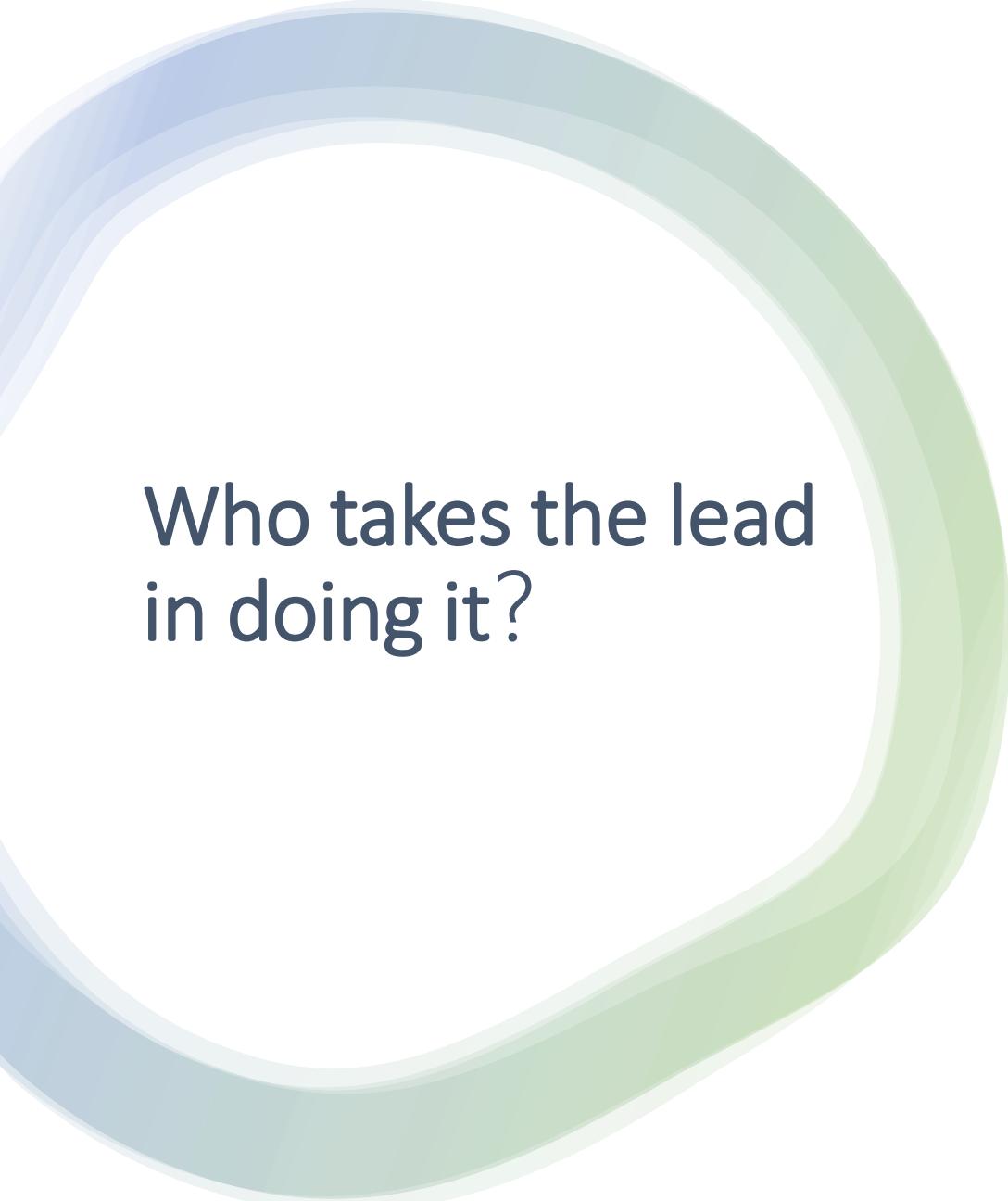
open source

- "Free Software" (Free Software / Libre Software)
- ... Is a class of software that can be freely used, copied, studied, modified and distributed without restriction, respecting the freedom of users ...
- ... Free software doesn't have to be free software, and free software itself doesn't resist commercialization. Free software is protected by a selected "Free Software License Agreement" and is released (or placed in the public domain)...
- <https://zh.wikipedia.org/wiki/自由软件>

What is free software?

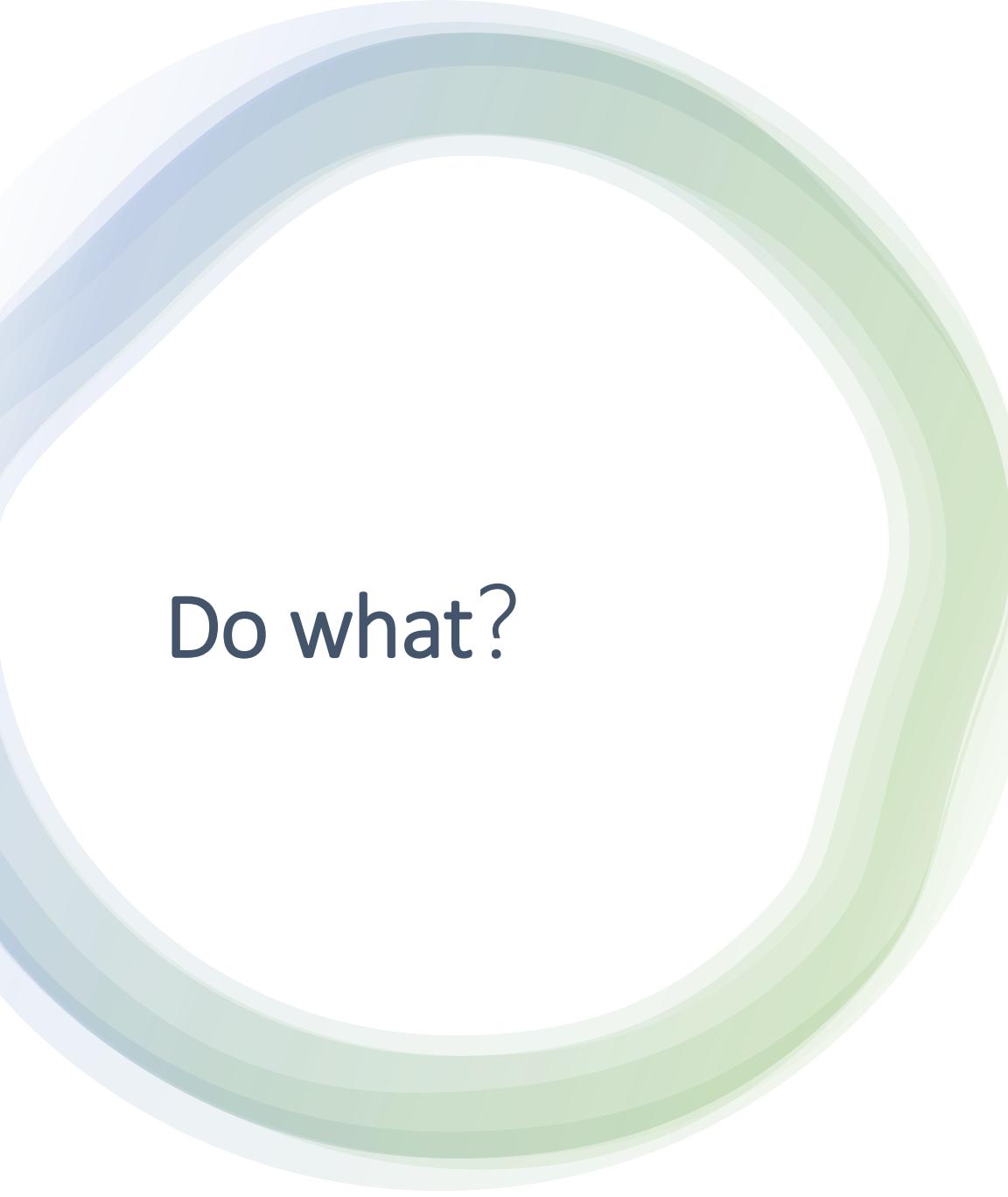


Free Software
Free Distribution
Source Code
Derived Works



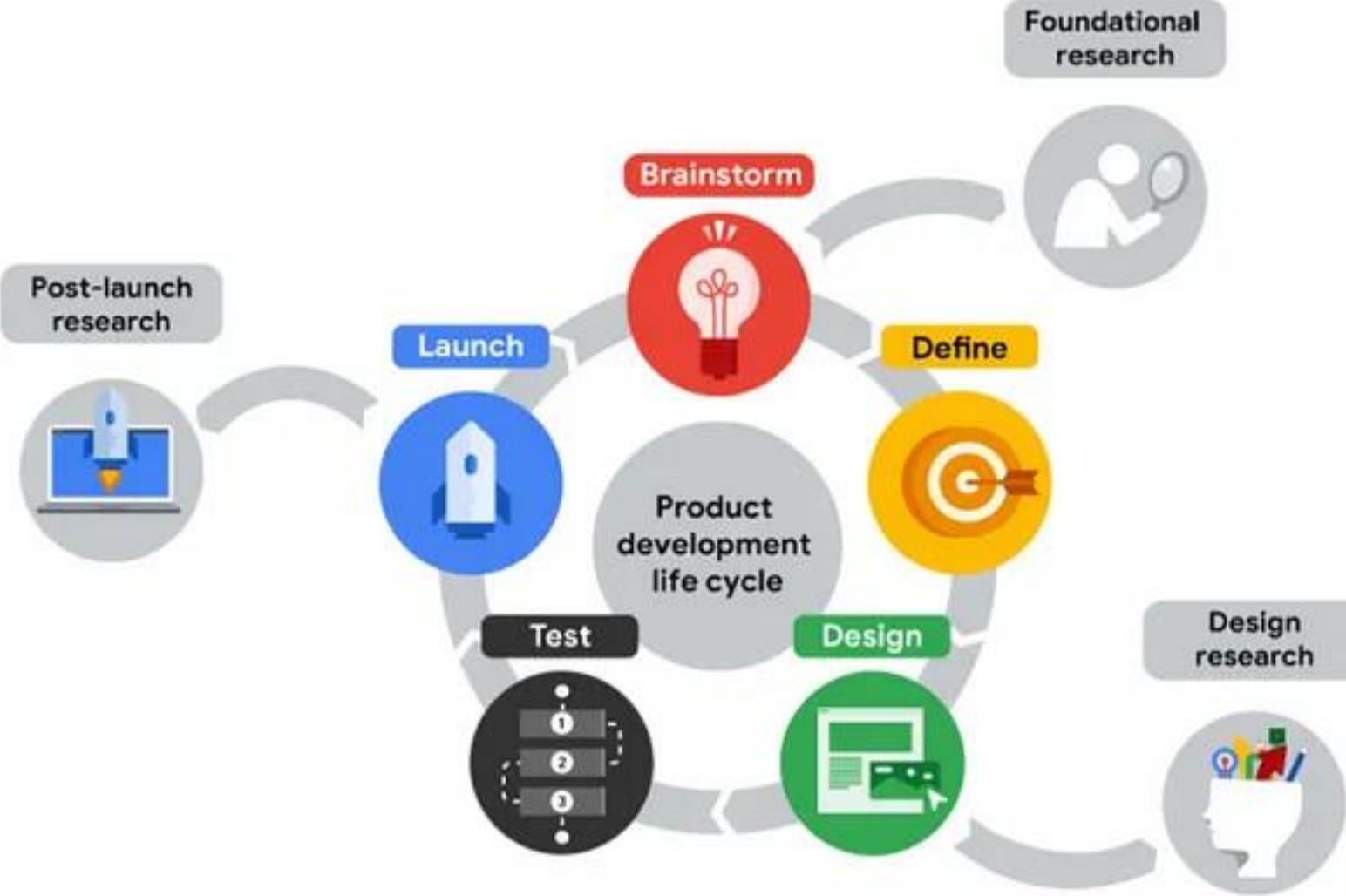
Who takes the lead
in doing it?

- Individuals start some projects
- People associated with open source organizations



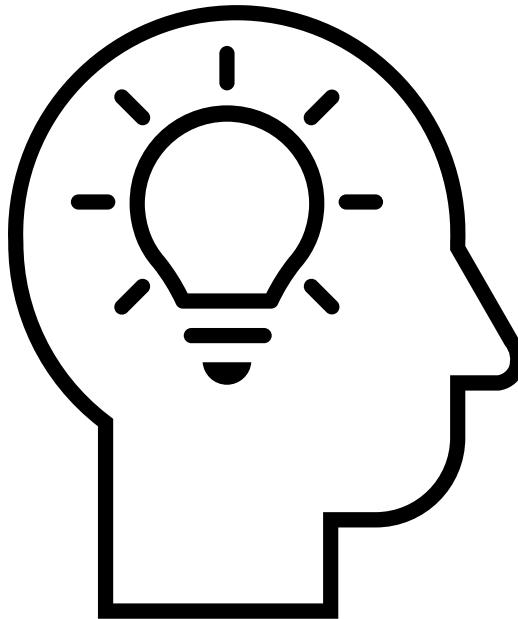
Do what?

Standardise
&
Certify

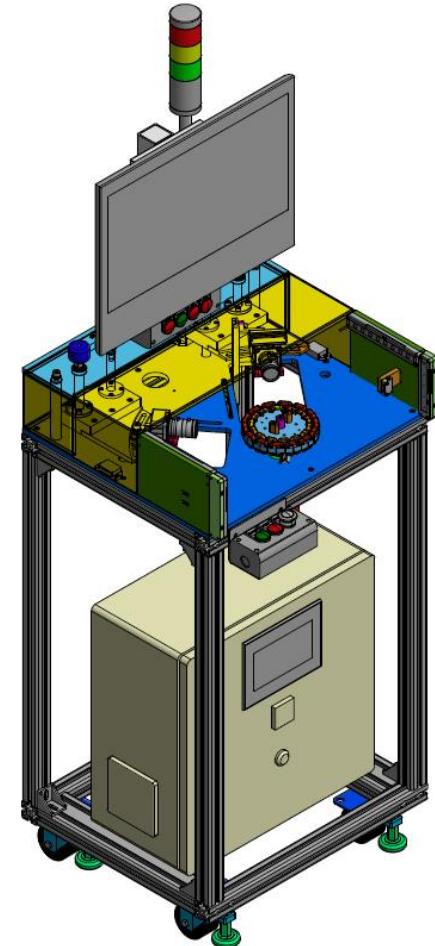


Everyone

Academic



Idea



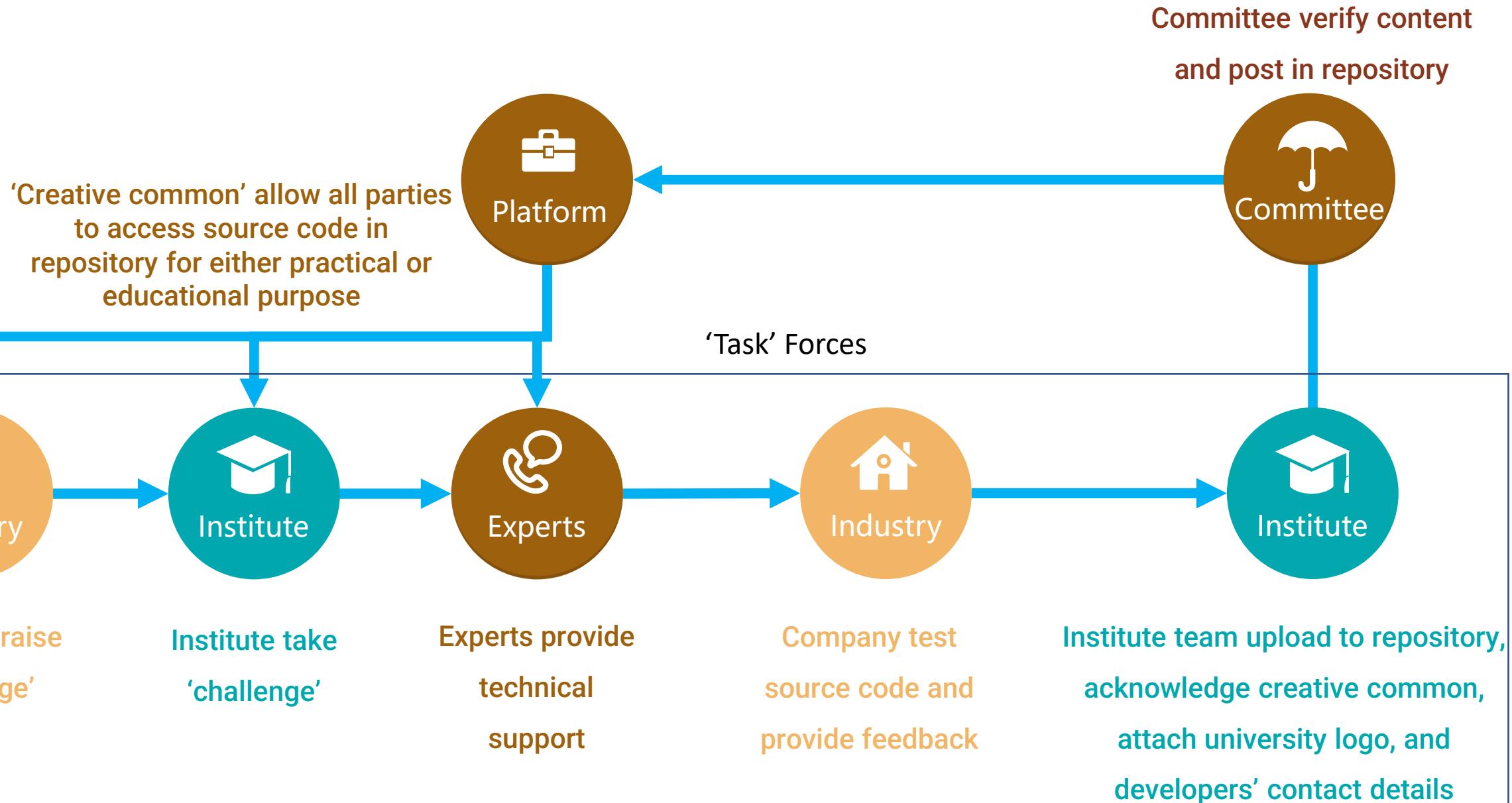
Open Source

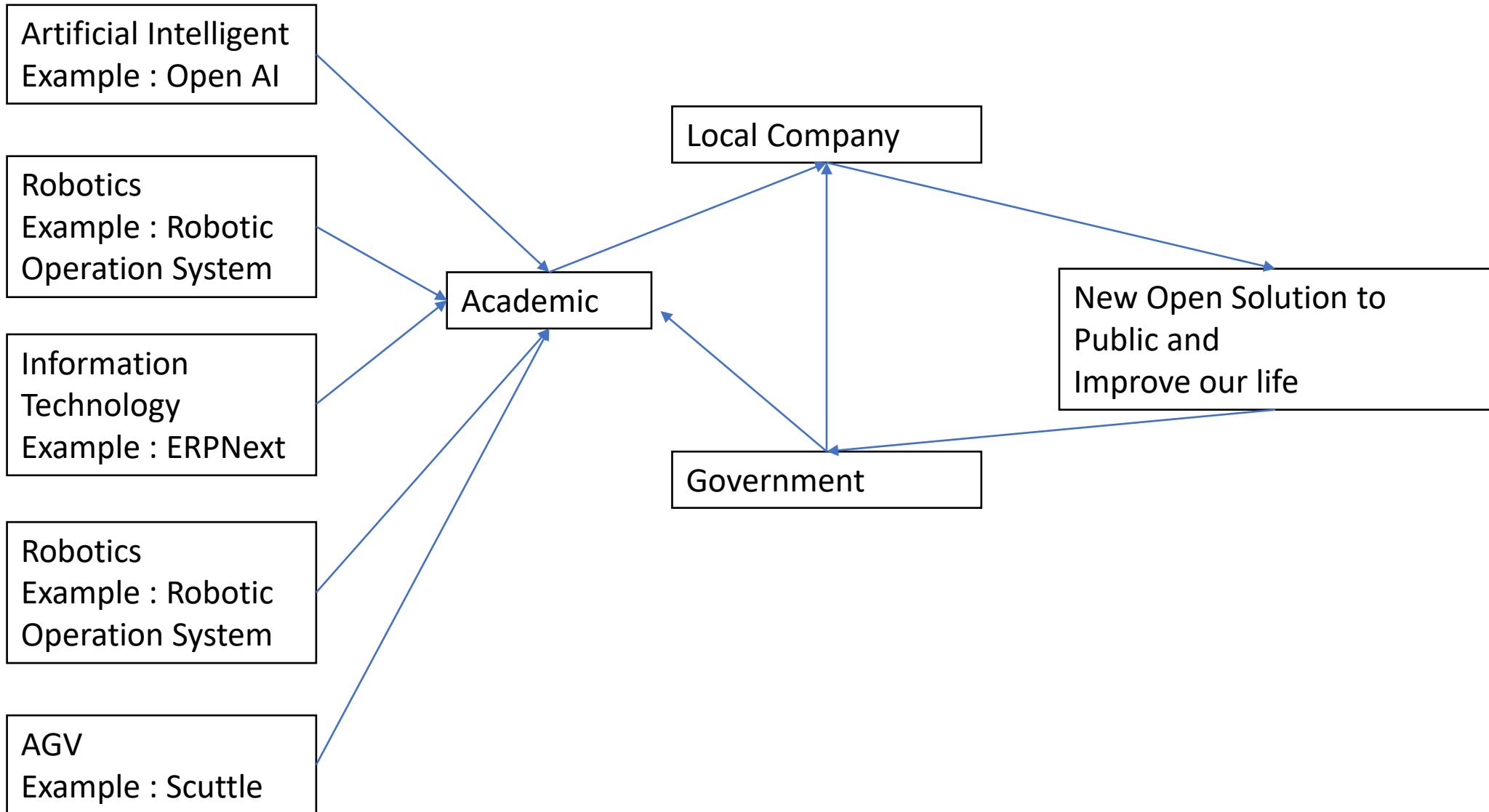
Industrial



Benefits





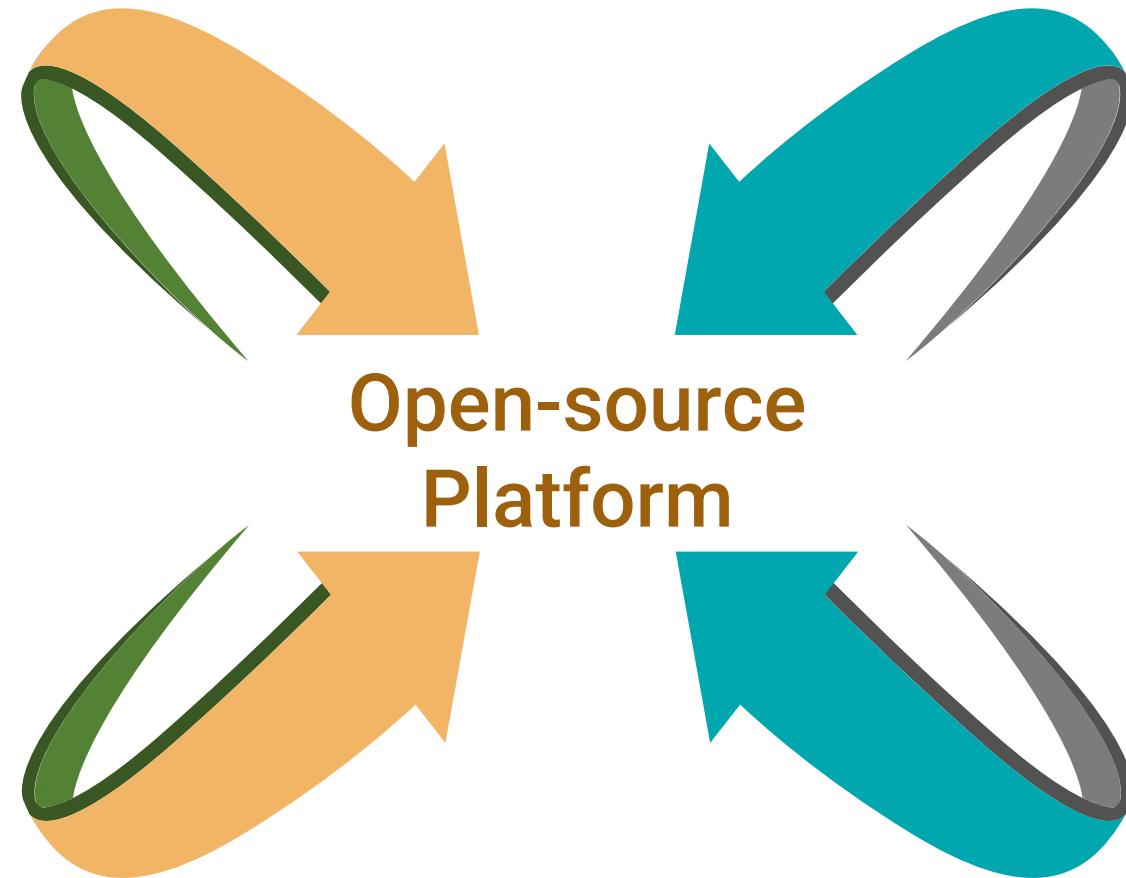


Students

Possibility of earning income through task force and 'Employed before Graduated'

Institute

Industrial funding and MoU for academic-industrial Collaboration

**Industry**

Faster transition to and reduce cost of digitalization

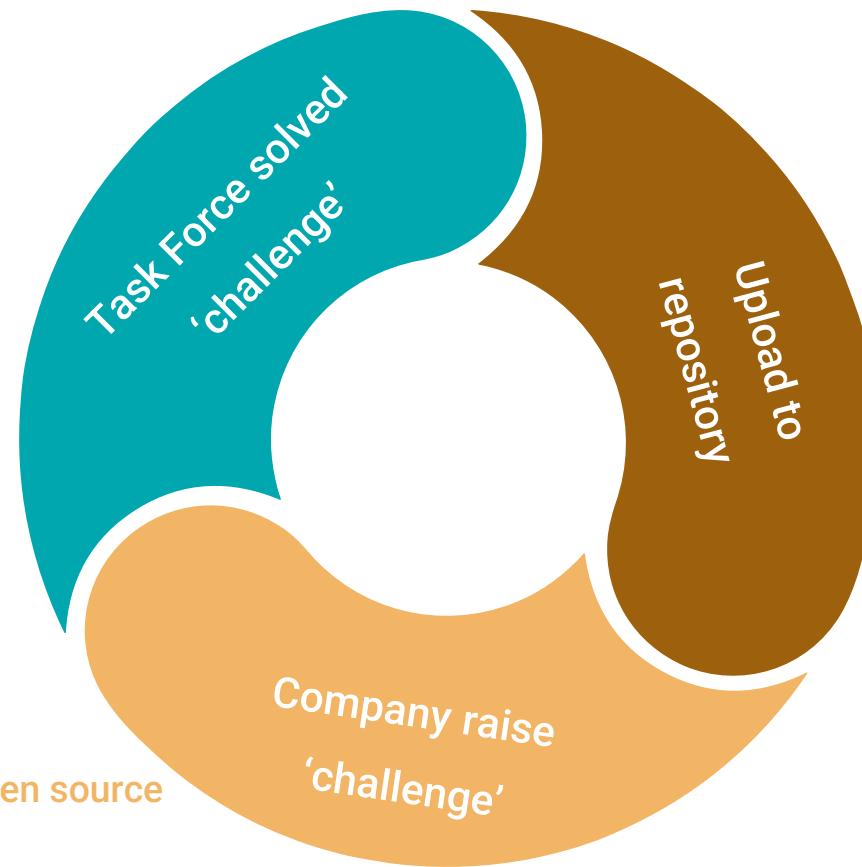
Southern Region
Moving towards Industry 4.0

Task Force that including students take the challenge and develop source code

- Students get exposure to industrial practices - **EXPERIENCE**
- Students earn income if the challenge is funded - **INCOME**
- Company may recruit student during or after 'challenge' - **'EMPLOYED-BEFORE-GRADUATE'**

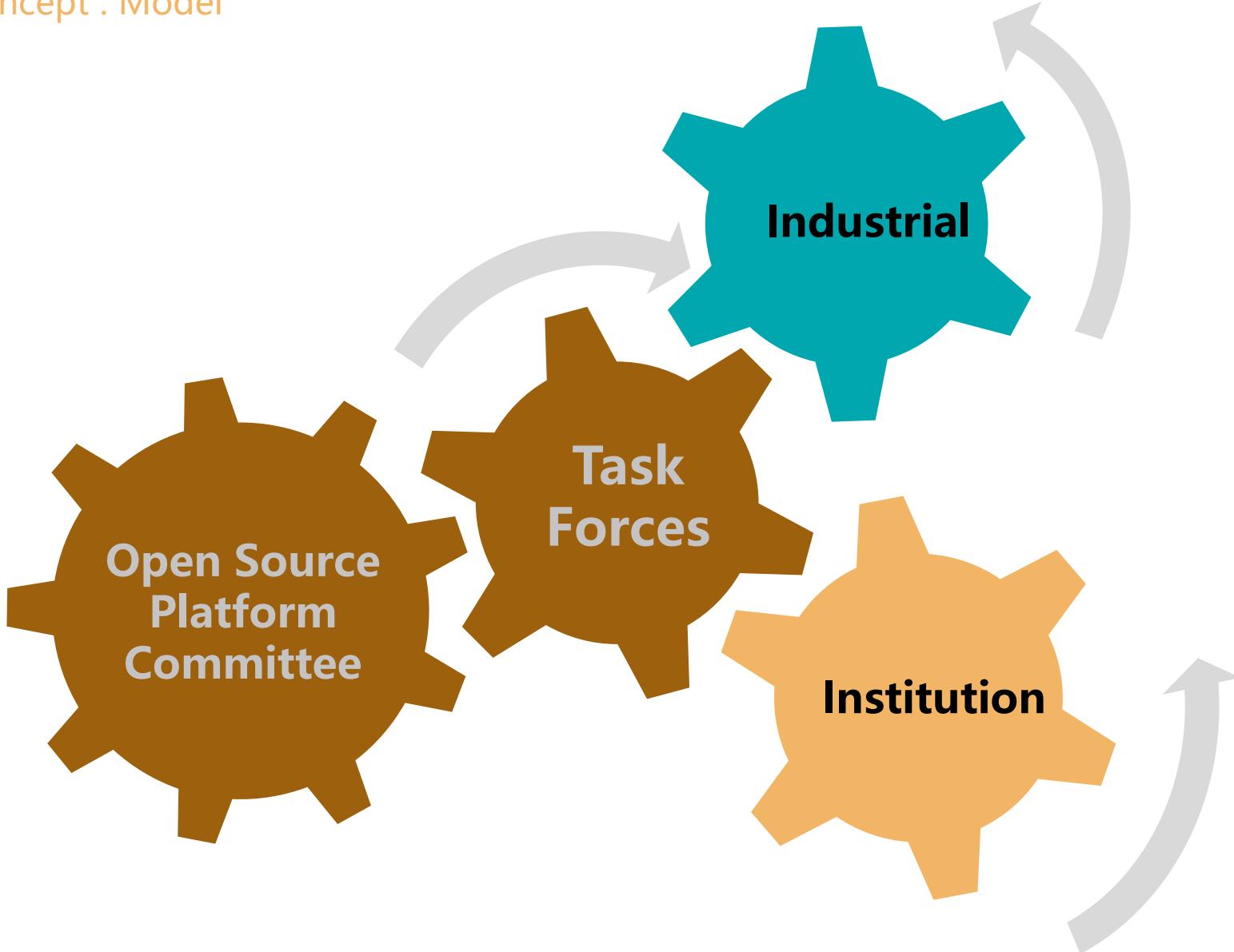
Company raise 'challenge' through the open source platform

- Company identify critical part of operation and request task force to develop source code – **DIGITALISATION**

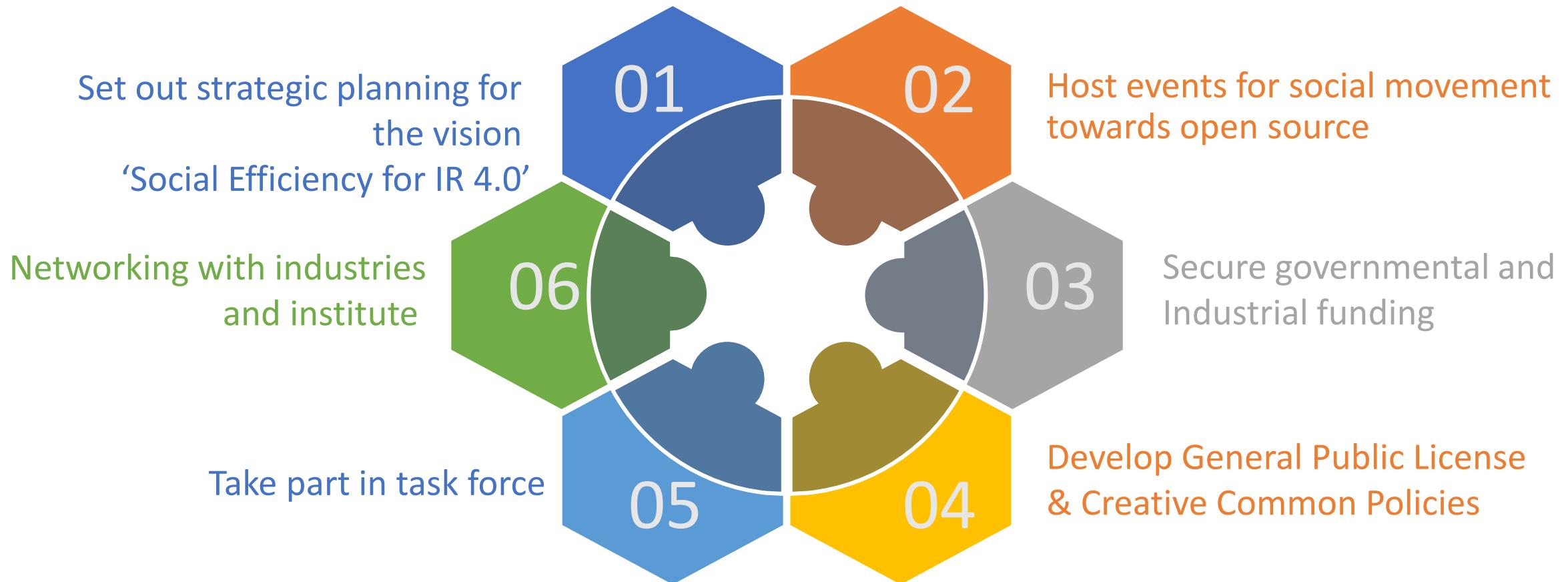


Source code in the repository is open for all

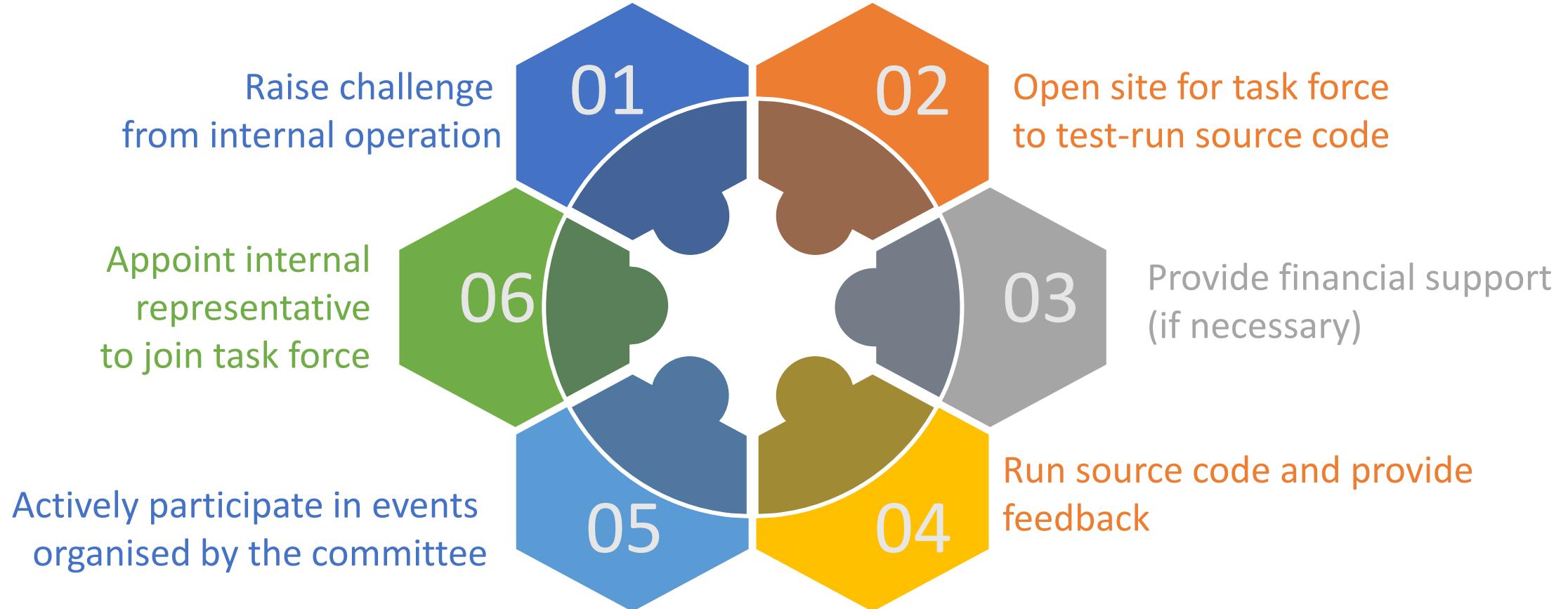
- Other companies and institute can download, utilise and provide feedback for continuous improvement – **SOCIAL EFFICIENCY**
- Industry can download and utilise the source code to digitalise the operations – **INDUSTRY REVOLUTION 4.0**
- Other companies can download the code and request for customization – **CONSULTATION & INCOME**



02 Open-source Concept : Committee Responsibility

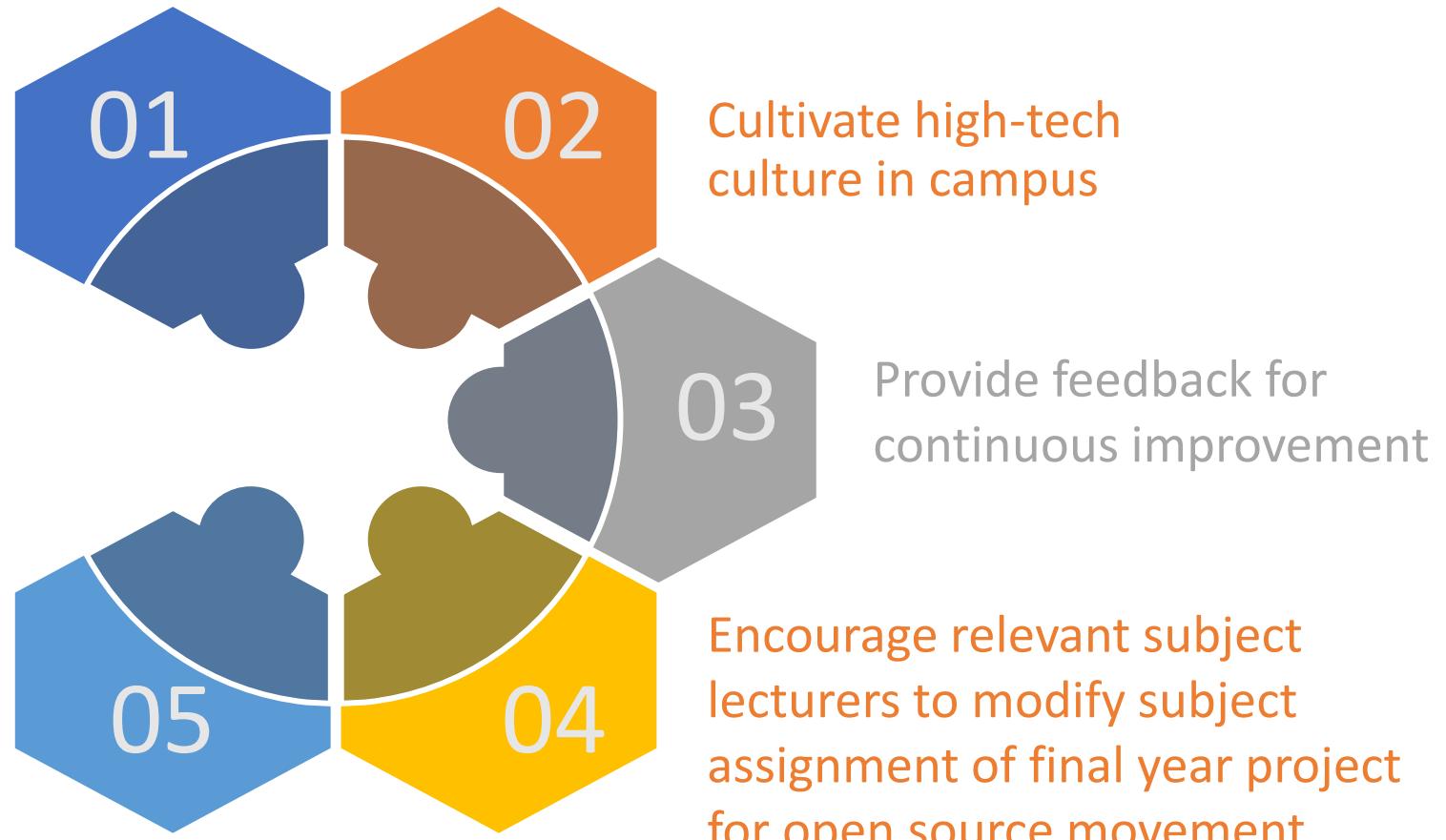


02 Open-source Concept : Industry Responsibility



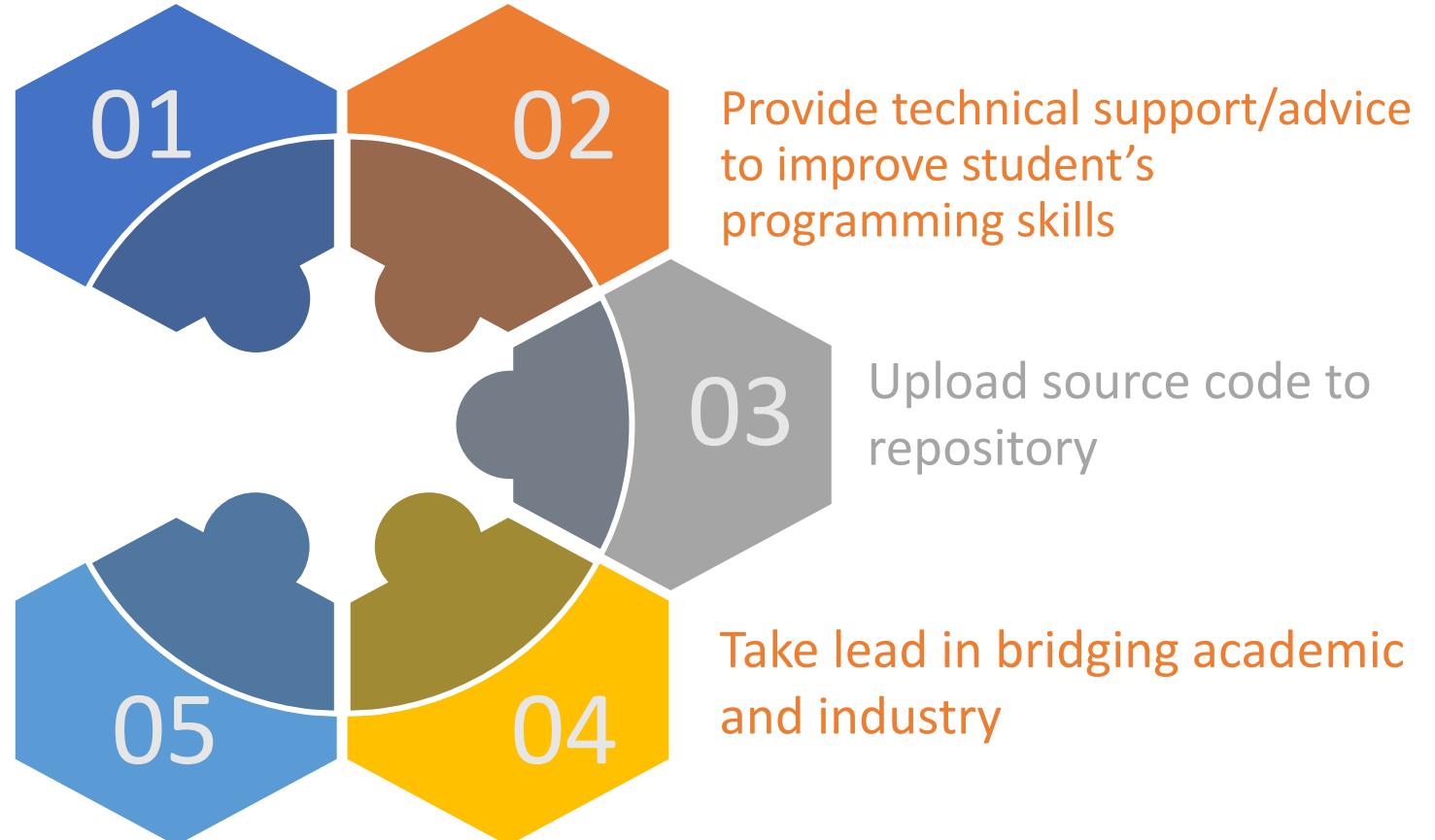
02 Open-source Concept : Institution Responsibility

Provide venue for events organised by task force



Develop solution for challenge accepted

Provide feedback for continuous improvement

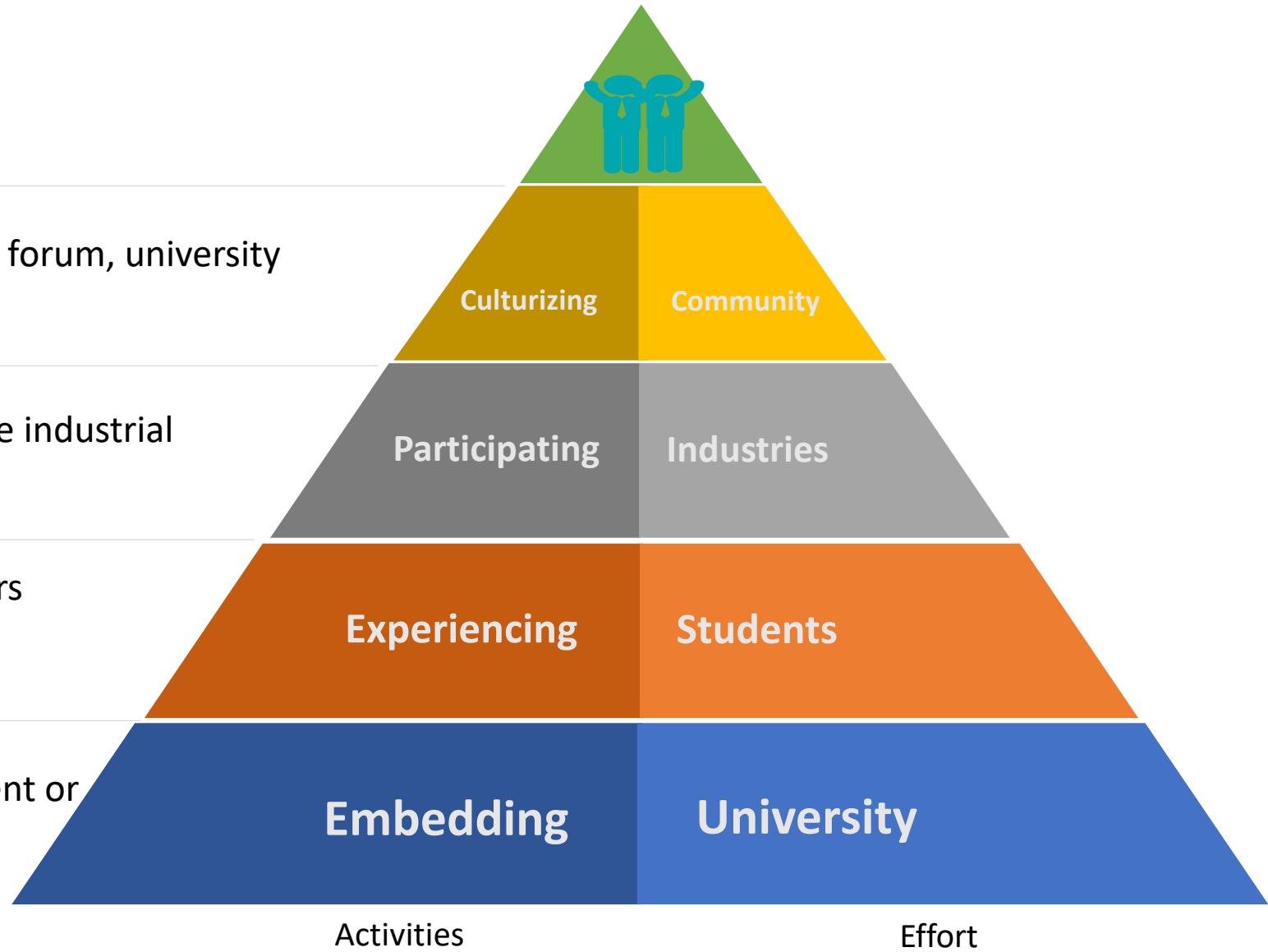


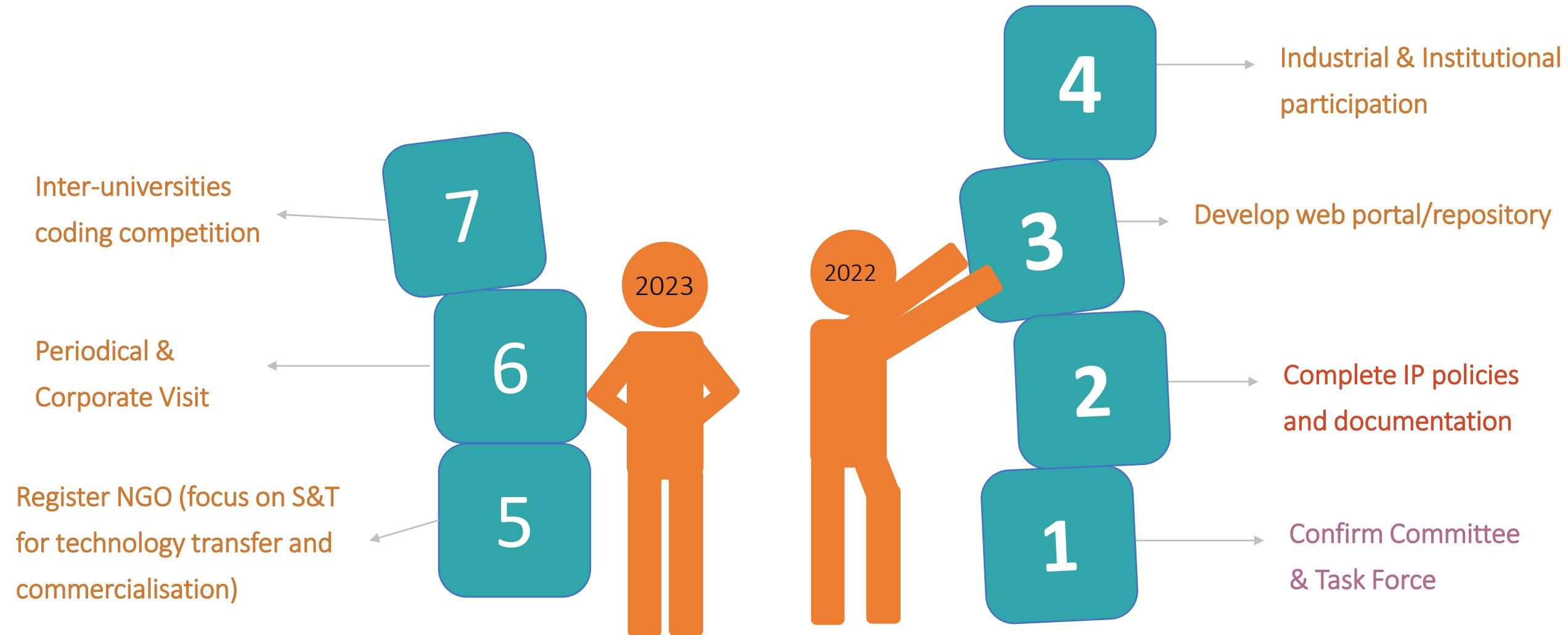
Organise public events such as seminar and forum, university competition, newsletter, etc

Invite student for industrial visit or organise industrial 'pitching' session

Subject lecturers or student society advisors provide guidance to students

Embedded into relevant subjects assignment or final year project.





The technical side of free software

Integrity of The Author's Source Code

No Discrimination Against Persons or Groups

No Discrimination Against Fields of Endeavor

Distribution of License

License Must Not Be Specific to a Product

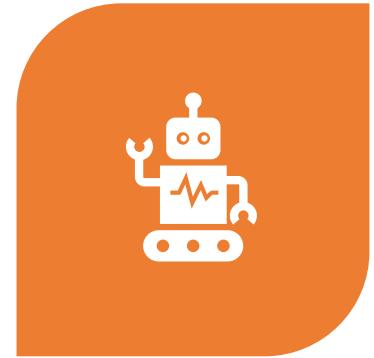
License Must Not Restrict Other Software

License Must Be Technology-Neutral

International system

- Free Software Foundation - GNU projects
 - Apache Software Foundation
 - Linux Foundation
 - Python Software Foundation
 - .NET Foundation
 - more.
-
- Refer : https://en.wikipedia.org/wiki/List_of_free_and_open-source_software_organizations
 - You can check the annual reports of each foundation for more information

task force



ROBOT TASK FORCE

MR. CHONG YOE YAT



OPEN SOURCE
PLATFORM ACTIVITY
TASK FORCE

MR. TAN CHANG SIN

Example

$y = g(x)$

Secant Lines

Tangent Line T

$x+h$

$\frac{g(x+h) - g(x)}{h}$

$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$

$f'(x) = \lim_{h \rightarrow 0} \frac{(x+h)^2 - x^2}{h}$

$= \lim_{h \rightarrow 0} \frac{x^2 + 2xh + h^2 - x^2}{h}$

$= \lim_{h \rightarrow 0} \frac{2xh + h^2}{h}$

$= \lim_{h \rightarrow 0} h(2x + h)$

Practical example – human-robot collaboration



Practical example

- Machine vision





48,030

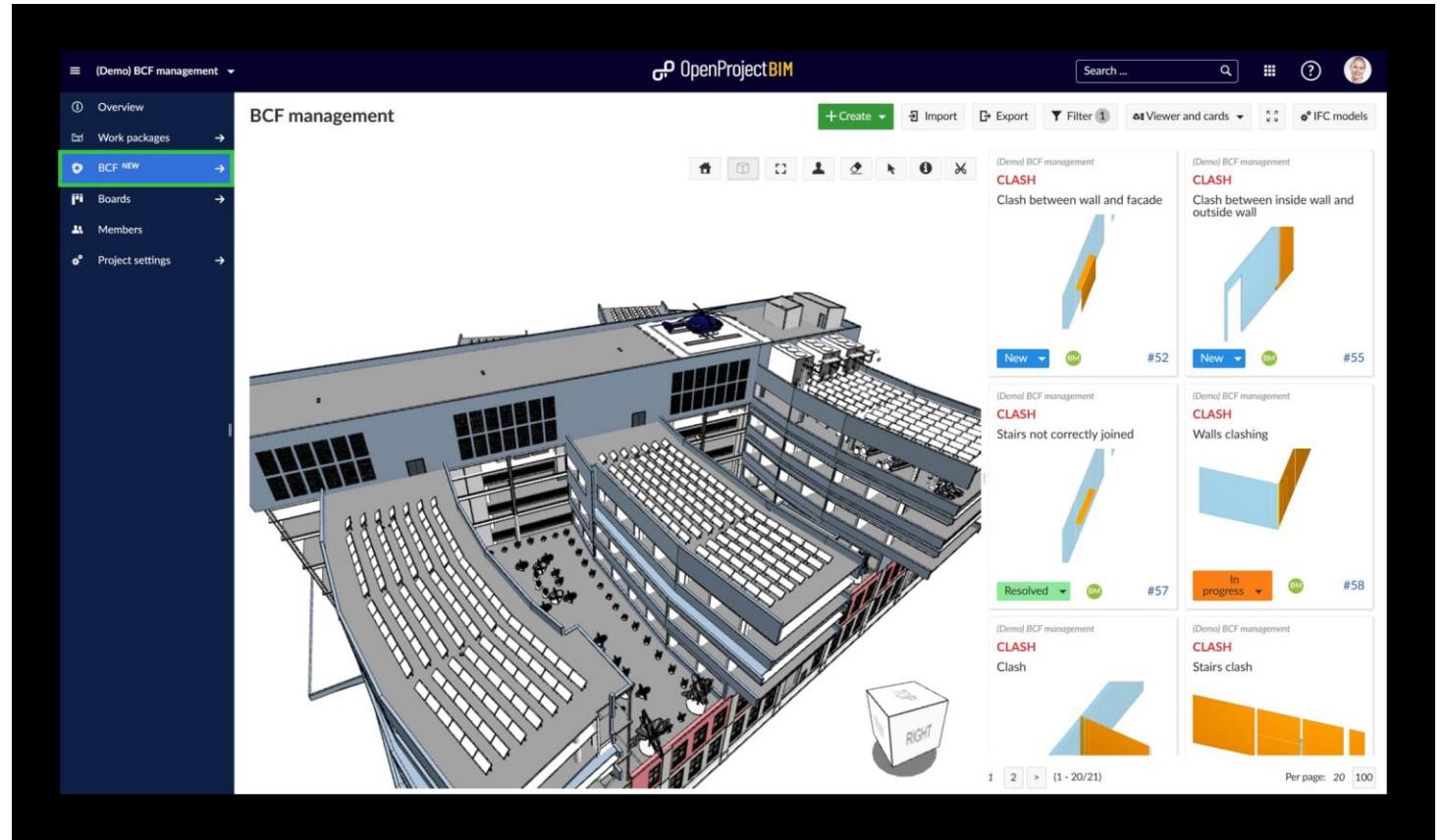
FG Total count

FG Line 2 hourly output		FG Line 1 hourly output		Mainbody hourly output	
Proc Time	Count	Proc Time	Count	308 Main I Proc Time	Count
Sunday, September 16, 2018 10:00 PM	72	Sunday, September 16, 2018 10:00 PM	118	Sunday, September 16, 2018 11:00 PM	12
Sunday, September 16, 2018 9:00 PM	48	Sunday, September 16, 2018 9:00 PM	28	Sunday, September 16, 2018 10:00 PM	110
Sunday, September 16, 2018 8:00 PM	15	Sunday, September 16, 2018 8:00 PM	10	Sunday, September 16, 2018 9:00 PM	10

Practical example – big data

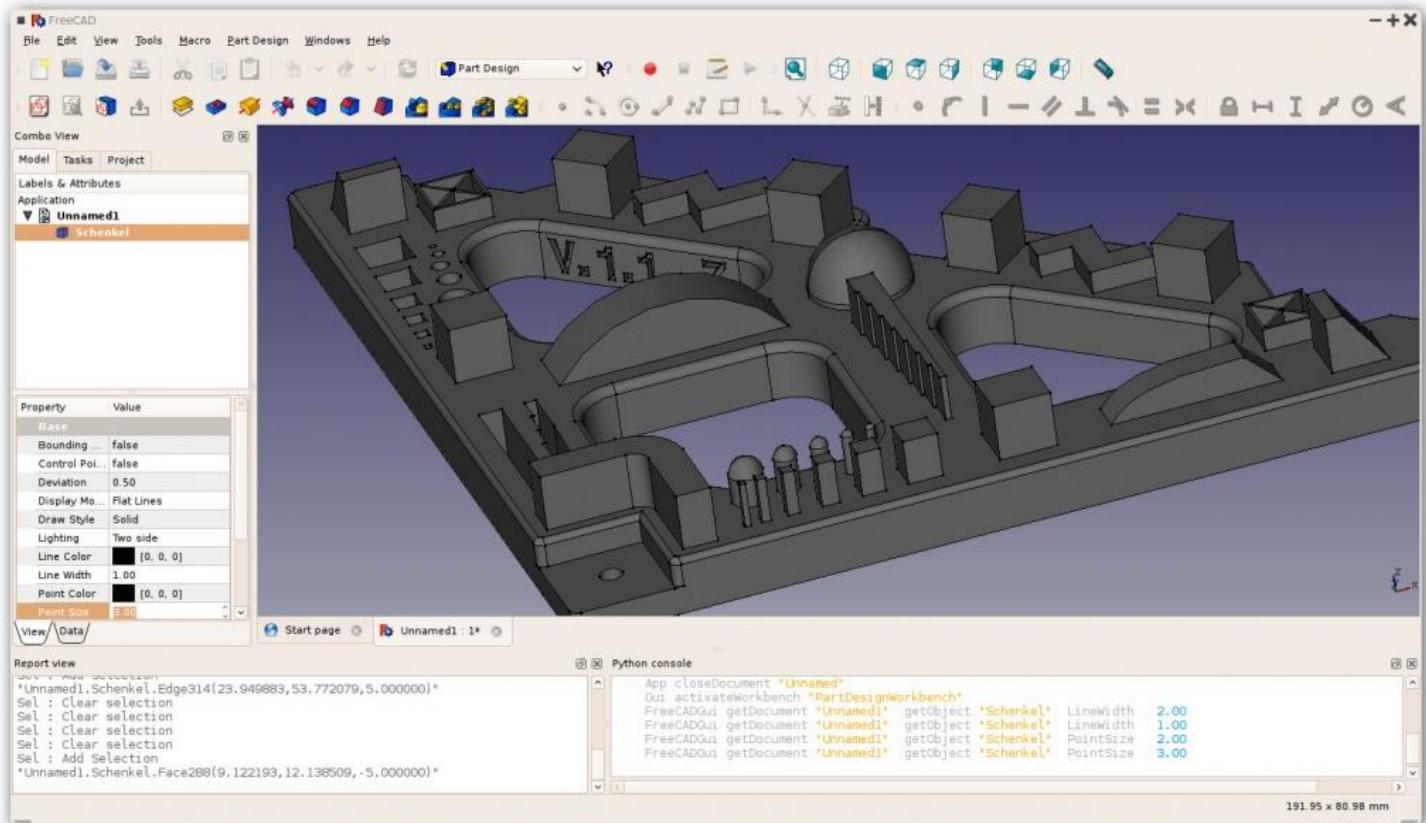
Open Project BIM

- Image source :
<https://www.openproject.org/blog/images/2020/11/BCF-module-1f4a9581.jpg>



FreeCAD

- Image source:
https://wiki.freecadweb.org/images/thumb/2/2a/Freecad_default.jpg/1024px-Freecad_default.jpg



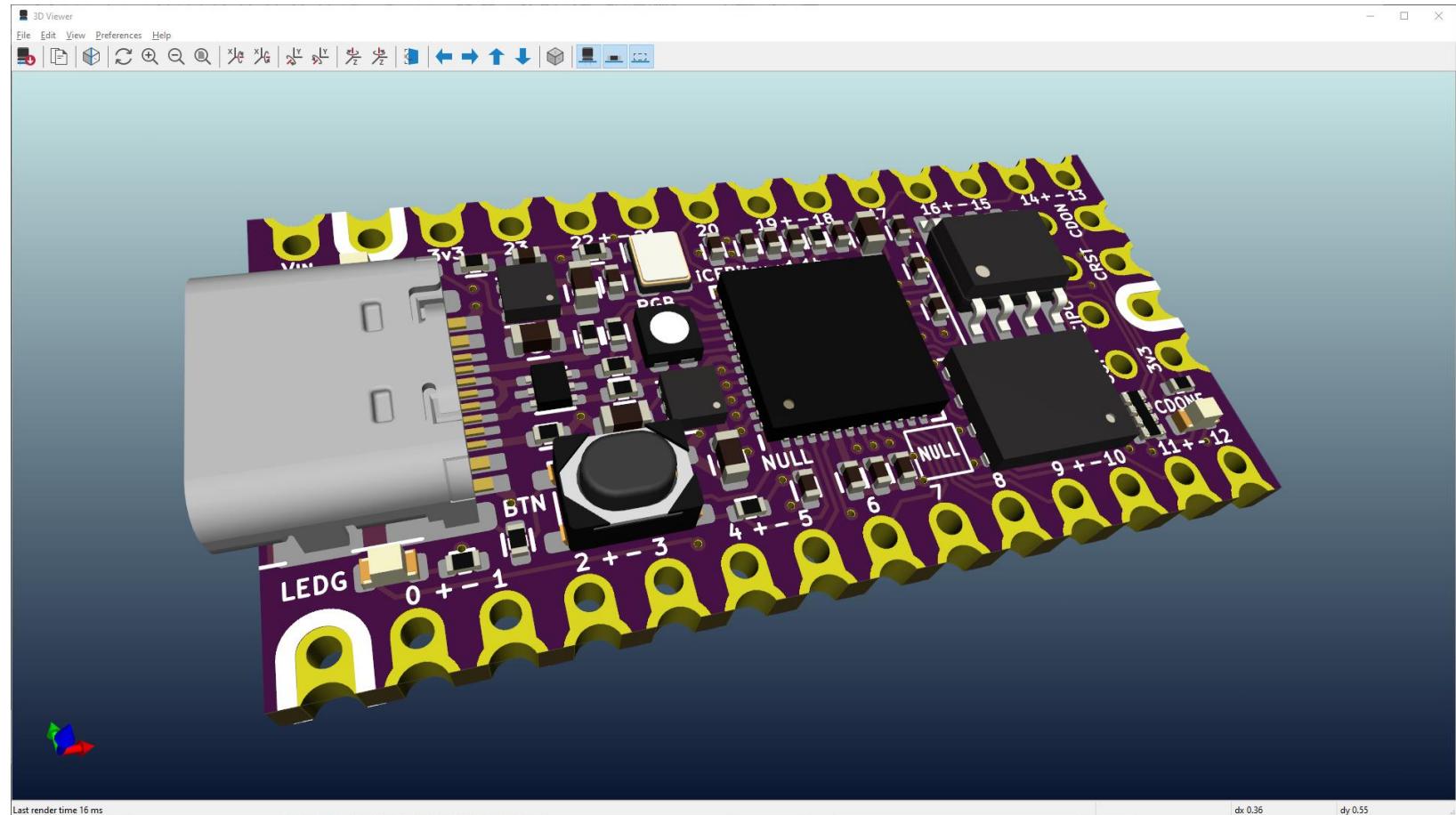
Blender

- Image source:
[https://www.blender.org/
wp-
content/uploads/2019/07/
/animation01-
1280x720.jpg?x75913](https://www.blender.org/wp-content/uploads/2019/07/animation01-1280x720.jpg?x75913)



KiCAD EDA

- Image source:
[https://www.kicad.org/img/
frontpage/kicad_3dviewer.p
ng](https://www.kicad.org/img/frontpage/kicad_3dviewer.png)



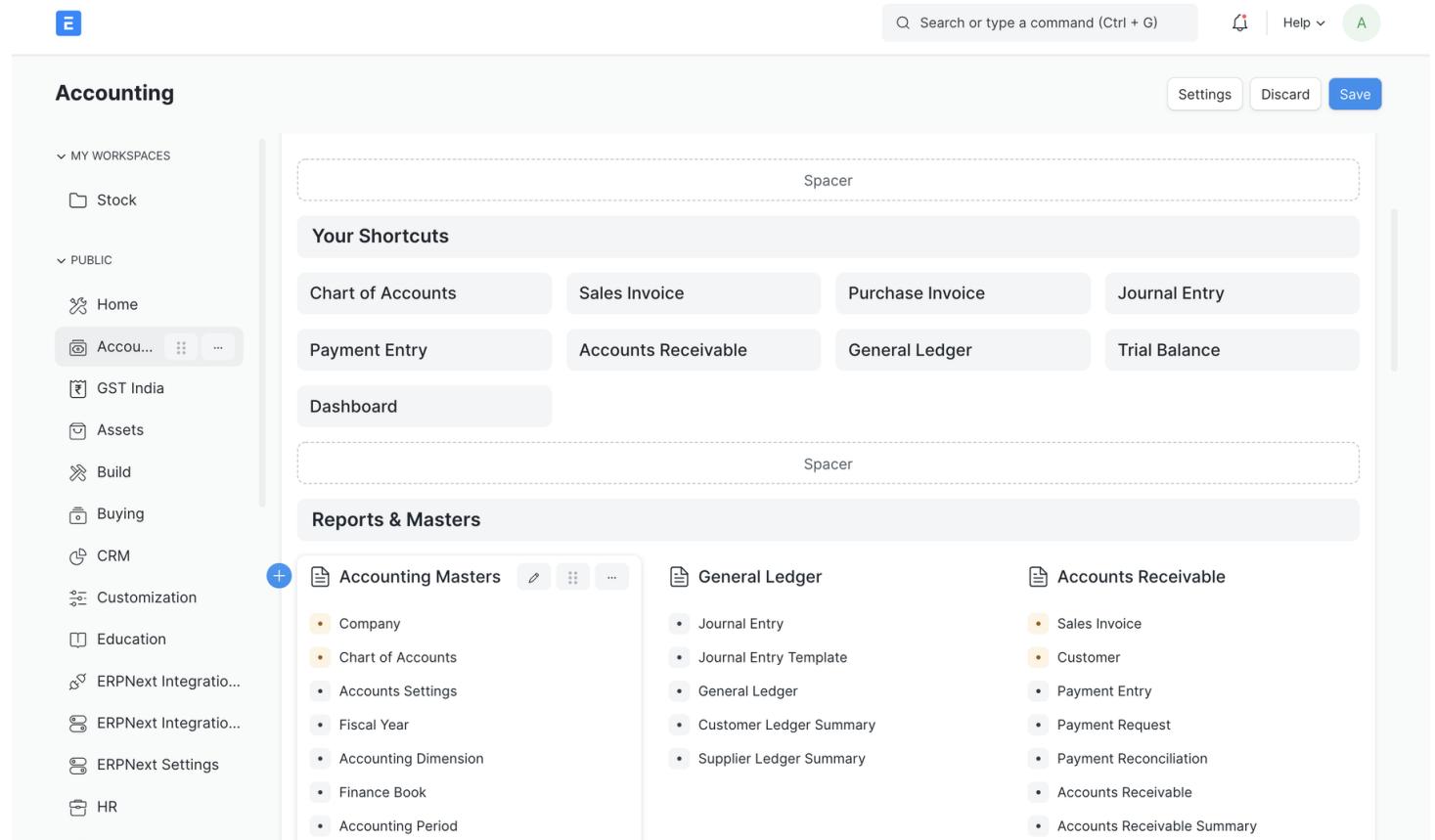
Raspberry Pi

- Image source:
https://upload.wikimedia.org/wikipedia/commons/thumb/f/f1/Raspberry_Pi_4_Model_B_-_Side.jpg/1200px-Raspberry_Pi_4_Model_B_-_Side.jpg



Erpnext

- Image
source:<https://erpnext.com/files/edit-workspace6c0080.png>



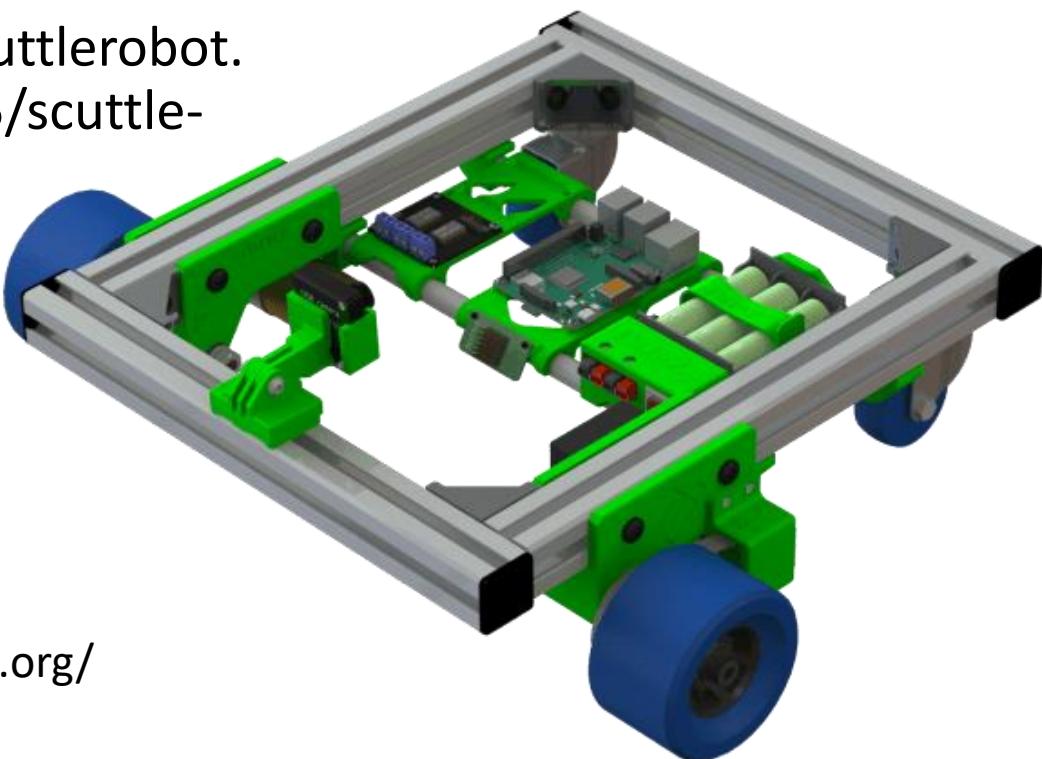
Thingsboard.io

- Image source:
<https://thingsboard.io/images/usecases/smart-energy/se4.png>



SCUTTLE Robot (Differential Vehicle)

- Image source:
<https://www.scuttlerobot.org/2023/01/25/scuttle-v2-4/>



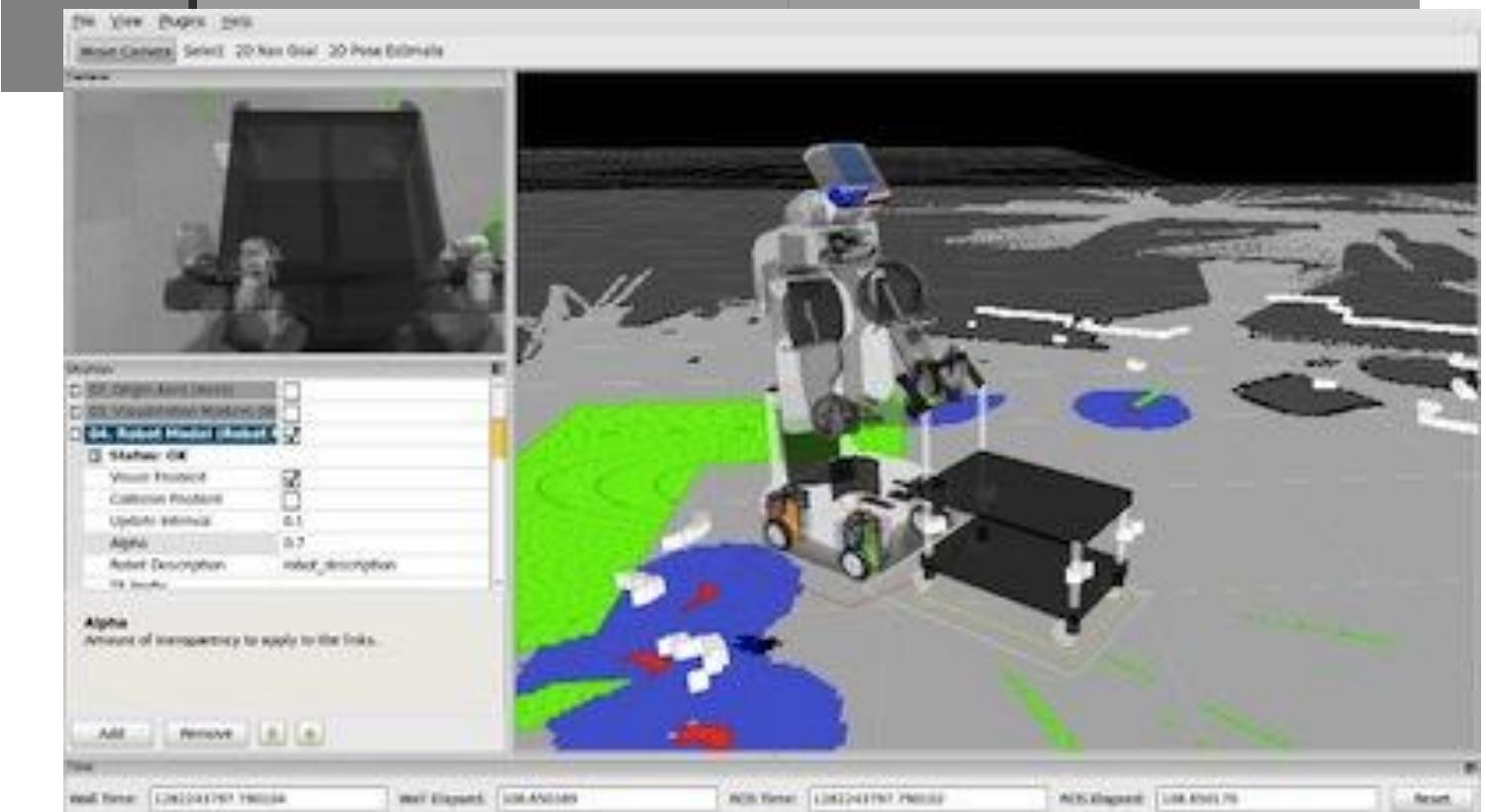
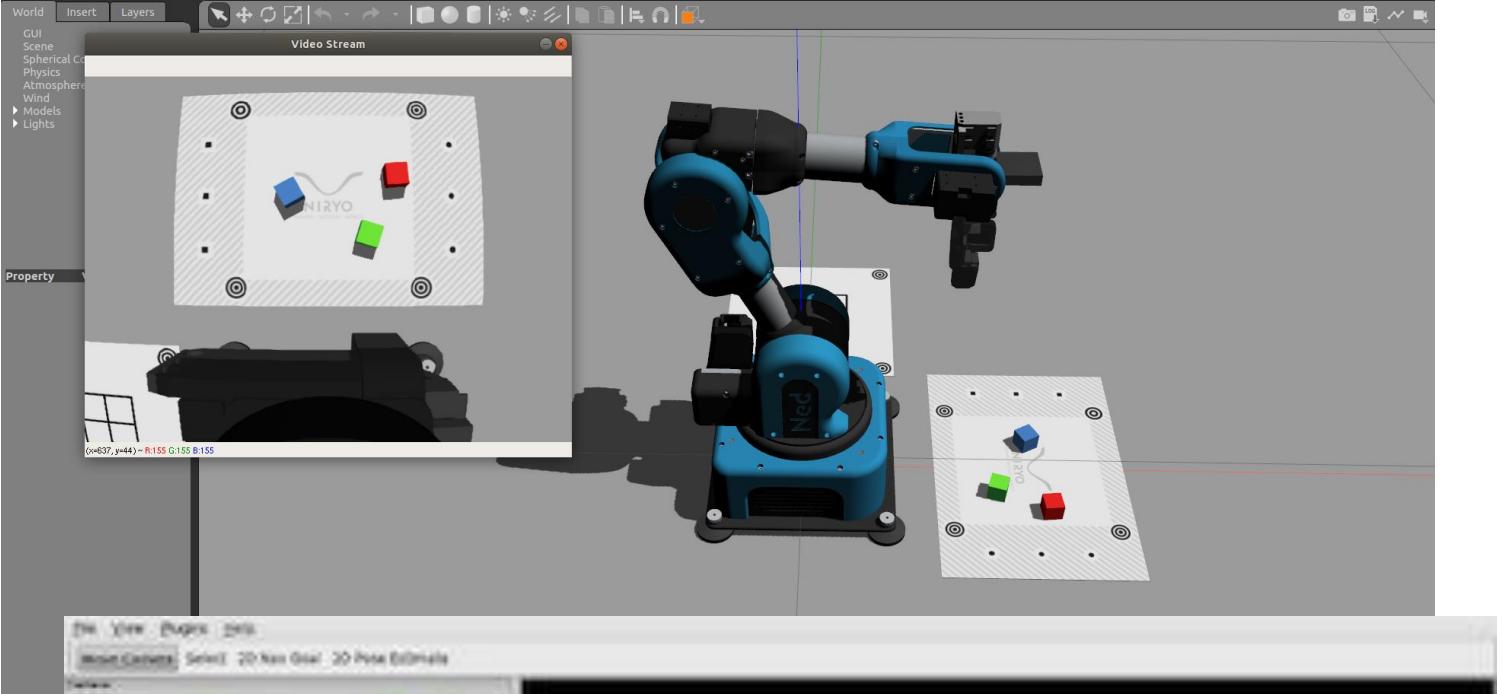
<https://www.scuttlerobot.org/>



ROS (Robotics Operating System)

- Image source:
https://upload.wikimedia.org/wikipedia/commons/b/b8/Cart_pushing_rviz_holonomic.jpg
- <https://docs.niryo.com/dev/ros/v4.1.0/en/source/simulation.html>

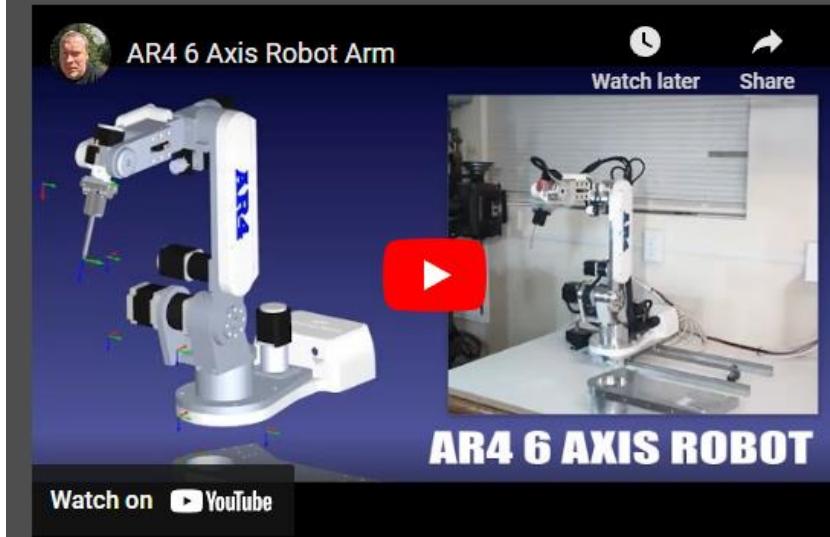
<https://www.ros.org/>



AR4 Robotics Arm (6 Axis)

- Image source:

<https://www.anninrobotics.com/tutorials>



The 3D print files, operating software and assembly manuals can all be found on our downloads page for free.

Aluminum parts and hardware kits are available on our kits page.

The goal of the AR series of robots is to create the lowest cost option so that anyone could build a 6 axis robot for fun, educational purposes or small production operations.

My goal is to continue improving the software and functionality and provide the lowest cost solution for a 6 axis robot that can actually be used for real tasks.

The Annin Robotics AR series of robots are desktop size industrial robots that are free open plan low cost robots. Anyone can make these robots and they can be made using aluminum components or you can 3D print the parts yourself.

These robots are widely used in small automation processes and in hundreds of high schools, technical schools and colleges in a variety of educational programs.

The AR2 robot was the initial release of this robot and is the open loop version, The AR4 is the latest generation and is closed loop with encoders and compatible with RoboDK software.





Johor Digital Economy Centre opens in December 2020

- Xpress Train, Drone And Robotics Zone Iskandar,
- Khairy Jamaluddin (Minister of Science, Technology and Innovation)
- Open source promotion year 2021



OPEN SOURCE PLATFORM - JFEIA - RAFFLES UNIVERSITY MEETUP APRIL 2022



UTM VISIT

- 2022 APRIL





Southern University College Open Source Commentary April 2022

Open source platform webinars

- @ 2022 April





Southern University TBM TOPFLOW Open Source Visits June 2022



VTC Solution Sdn Bhd Open Source visits June 2022



Katapult, Wandel, Pintas, Schneider visit 2022 July

Raffles university Innopeak Sdn Bhd Open source promotion

2022 August



企业如何利用开源软件 快速达到工业4.0



主讲人：张如日先生

张如日是人工智能系统&机器视觉专家
Fortune Machine

主讲人：刘哲涵博士

刘哲涵博士是一名首席数据官
澳洲昆士兰大学哲学博



JBCCI,
JFEIA,
MPMA,
Persatuan Pembina Johor,
Join Lecture August 24th 2022

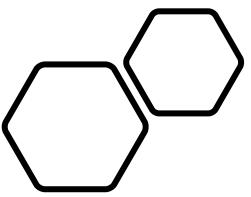


UTHM and TSH Company Open source promotion 2022 September and October





- **Datuk Onn Hafiz Bin Ghazi (Menteri Besar Johor)**
- **Ms Mydiana & Ms Wan Yuzareen (Iskandar Investment Berhad)**
- **Open Source Awareness Sharing February and March 2023**



List of free software and organizations

- <https://zh.wikipedia.org/wiki/自由及开放源代码软件列表>
- https://en.wikipedia.org/wiki/List_of_free_and_open-source_software_packages
- https://en.wikipedia.org/wiki/List_of_free_and_open-source_software_organizations
- https://en.wikipedia.org/wiki/List_of_open-source_hardware_projects
- Google keywords "open source" "open source" + "hardware and software solutions you want"

Tan Chang Sin

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 cstans98@live.com



Chong Yoe Yat

张如日

 +6012 793 9038

 chong@fmvcv.my



Open Source Platform

Academy • Industrial • Government

Advanced collaboration on technology

Related Links

https://www.fmvcv.my/?page_id=18

<https://github.com/cyysky/>

