Interactive Application Service

a virtual laboratory for the 21st century
Agenda

- What is the IAS?
- Why are we doing this?
- How does it work?
- Showcase
IAS - what is it?

- web based tool
- provides access to both web-based apps and remote desktop connections
- start/stop/share your apps
- every app can be made available
IAS - why are we doing this?

- Big Data Volumes
- Massive Processing
- Complex Algorithms

Information

Value-added
IAS - why are we doing this?

“*It is tedious to access the data.*”

“It is complicated to work with the software.”

“The environment is not fast enough.”

It doesn’t have to be like that.
1. Register for software usage and download and select (the right) version (nightly builds, latest, stable, developer, etc.)
2. Download data (this may take a while...)
3. Install software
4. Go through licensing process(es) (think of IT regulations, license servers, etc.)
5. Setup environments on your machine(s) (and fight your previously set up environments...e.g. Python, prepare configurations, etc.)
6. Work
7. In case of large-scale (...) processing:
   Have a powerful Workstation
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**Classic** vs. **Cloud**

**Two different approaches**

1. **Register**
2. **Access**
3. **Work**
Technical background

- Docker
- Persistent home over all instances
- Readonly archive available
- Shared folder per project
- Every webapp natively supported, e.g. jupyterlab, cloud9 IDE, ...
- For non-webapps: ubuntu + noVNC is used, e.g. SNAP, QGIS, ...
Example: Prototype new algorithm

- Using e.g. jupyterlab
- It takes only a few seconds to spawn a new instance and get going

Example: Visualize data

- Spawn a new instance with QGIS pre-installed
- Select data from archive or project folder

Get things done!
Showcase: Chlorophyll-a concentration in the water from Sentinel-2 or Sentinel-3 images.

- Algorithm - and now?
- The IAS is a prototyping platform with finite resources
- However - other services can be used, e.g. WPS service from C-TEP
import requests
from requests.auth import HTTPBasicAuth
import glob

user = "ctep_demo"
password = "ctep_demo!

PROCESSOR_NUMBER = 188
DATA_DIR = "/shared/phiweek/*"
BASKET = "/mount/dmz31/apps/ctep/basket/"
WPS_URL = "https://www.coastal-tep.eu/wps/"

xml_template = '<wps:Execute service="WPS" version="1.0.0" xmlns:wps="http://www.opengis.net/wps">
<!-- template-version: 0.21 -->
<ows:Identifier>urn:ctep:processor:{processor_number}</ows:Identifier>

<wps:DataInputs>
    <wps:Input>
        <ows:Identifier>file_S2</ows:Identifier>
        <wps:Reference xlink:href="file://\{file\}" mimeType="image/tiff"/>
    </wps:Input>
</wps:DataInputs>

<wps:ResponseForm>
    <wps:ResponseDocument storeExecuteResponse="true" status="true">
        <wps:Output>
            <ows:Identifier>outputFiles</ows:Identifier>
        </wps:Output>
    </wps:ResponseDocument>
</wps:ResponseForm>
</wps:Execute>
session = requests.Session()
headers = {'Content-Type': 'text/xml','X-CTEP-JobName': 'jupyter_phiweek_demo'}
auth = HTTPBasicAuth(user, password)

for file in glob.glob(DATA_DIR):
data = xml_template.format(processor_number=str(PROCESSOR_NUMBER),
                           file="{}/{}".format(BASKET, file))
response = session.post(WPS_URL, data=data, headers=headers, auth=auth).text
print(response)
Try & Give Feedback

https://www.coastal-tep.eu/ias/

user / pass: ctep_demo / ctep_demo! (as in the python snippet before…)

Contact me or the C-TEP team for your own account + with your opinion.
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Questions?