My Achievement on Open Science/FAIR

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MGML, Charles University (https://mgml.eu/)
My scientific background

Physicist using #neutrons (strongly correlated electron systems)
MGML local contact (20T magnet)
#opendata enthusiast (figshare ambassador)

I will talk about:
1) Opening Grant applications
2) Scripts are the best metadata
3) The need for Trustworthy data (F.A.I.R.T.)
Opening Grant applications

- Scientists receive huge sums of money through non-public grant applications.
- In 2020 there was over 3300 ERC starting grant applications, 436 successful
- 5 published (for all years)

Why?
- Dissemination
- Preregistration
- Public control

25th January 2022
3rd ESFRI RIs - EOSC Workshop: What does EOSC bring to RI users?
Scripts are the best metadata

```python
# Import libraries
import urllib
import numpy as np
import matplotlib.pyplot as plt

# Download the data
file = urllib.urlopen("https://cloud.eosc.eu/my_fair_raw_data.txt")
data = np.loadtxt(file)

# Treat the data
data[0] *= 2  # Because of my weird setup

# Plot the data for publication
plt.plot(data[0], data[1])
plt.savefig("foo.pdf")
```
Scripts are the best metadata

1. Download data \textit{with script}
2. Treat data \textit{with script}
3. Generate images for publication \textit{with script}
4. Add requirements.txt (or similar)
5. Publish scripts on github/gitlab/…
6. Use Zenodo/figshare/… to get doi
7. Use \url{mybinder.org} to test it

```python
1  numpy==1.22.1
2  matplotlib==3.5.1
3
```

Very fast process!
We published a paper within few hours on a students workshop!

\begin{itemize}
  \item arXiv:2010.12086
  \item doi:10.6084/m9.figshare.13130270
  \item https://github.com/me2d09/silicon
  \item https://mini-school.eu/
\end{itemize}
The need for Trustworthy: FAIR T

- Measured data are published in full form
- Raw data can’t be modified → control checksum
- Whole process is automatic

• EOSC: Certification of Research Infrastructures?
• RI: Education of users!
Summary

• Publish your grant applications
• Use scripts
• RI: provide Trustworthy data

Thank you

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