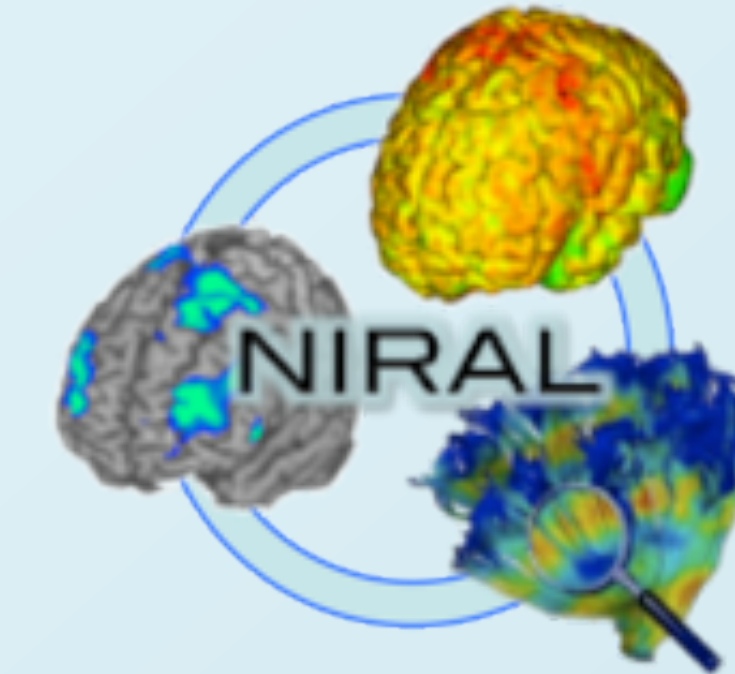




# Facilitating Experiment Reproducibility Through Data Federation and Image Processing Tools Integration

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## INTRODUCTION

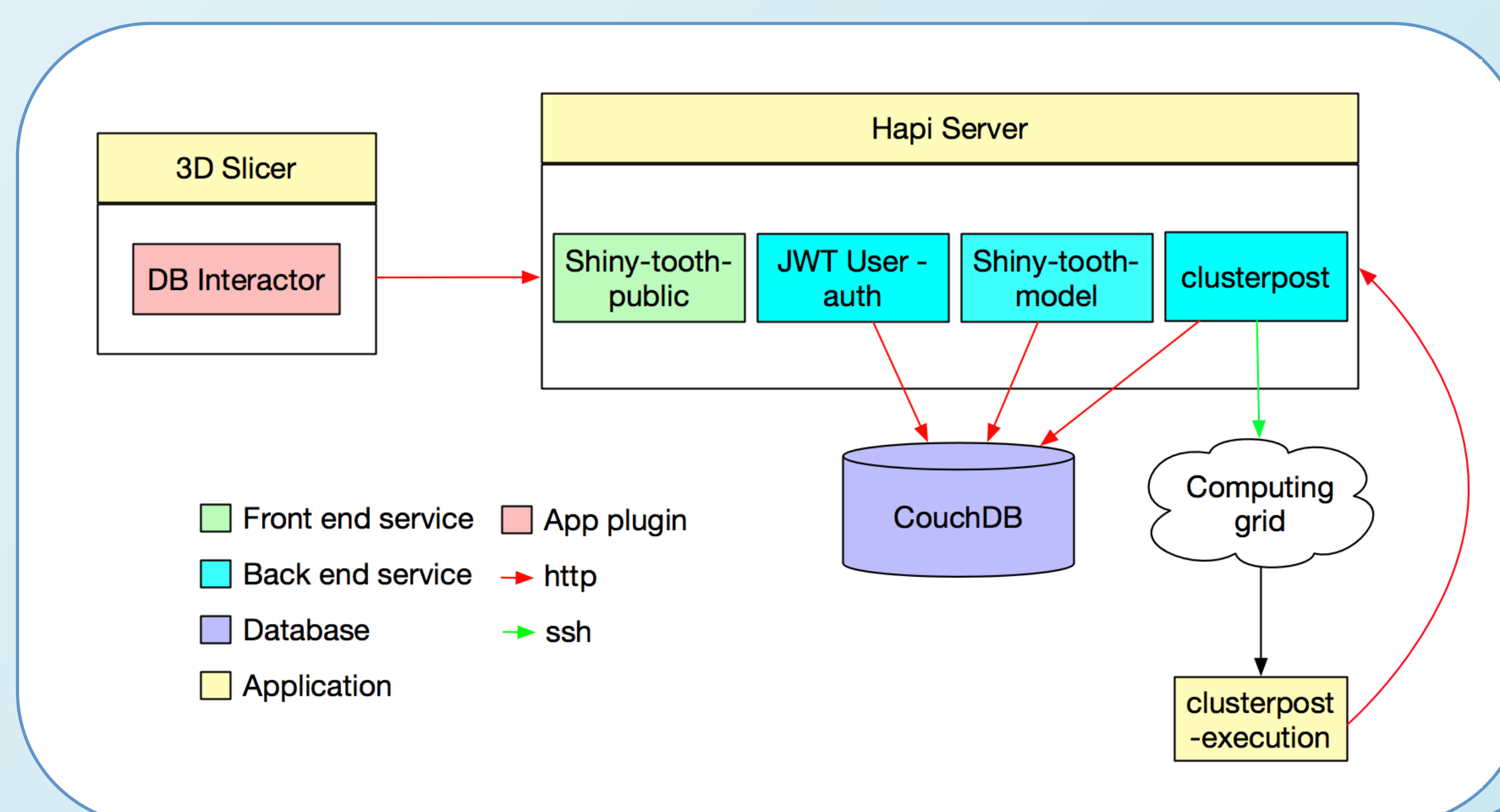
The primary motivation of this work is to improve the state of clinical research data organization in order to facilitate data sharing across institutions and collaborators and ultimately to facilitate the **reproducibility of clinical trials**.

*Many scientific findings cannot be easily replicated by other groups. This situation has drawn the attention of the scientific community.*

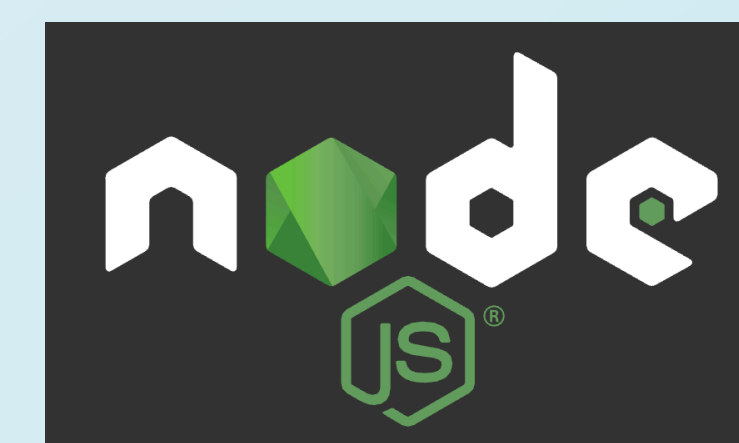
We present **Shiny-tooth**, a web based application created to facilitate:

1. Data federation of clinical and morphological data derived from medical images.
2. Web interactive data visualization.
3. Statistical analysis in remote computing grids using heterogeneous data sources.
4. Interaction with one of the most popular software for medical image analysis 3D Slicer.
5. Shape analysis using **Deep Learning toolkits**

## RESULTS



## METHODS



## CONCLUSIONS

The application allows gathering clinical data and morphological data in a structured but flexible manner.

Several tools and plug-ins have been published and are available in the node package manager (**npm**) repository.

An extension is developed for one of the most popular software for medical image processing and three-dimensional visualization.

The 3D-Slicer plug-in facilitates interaction with the data stored in the system.

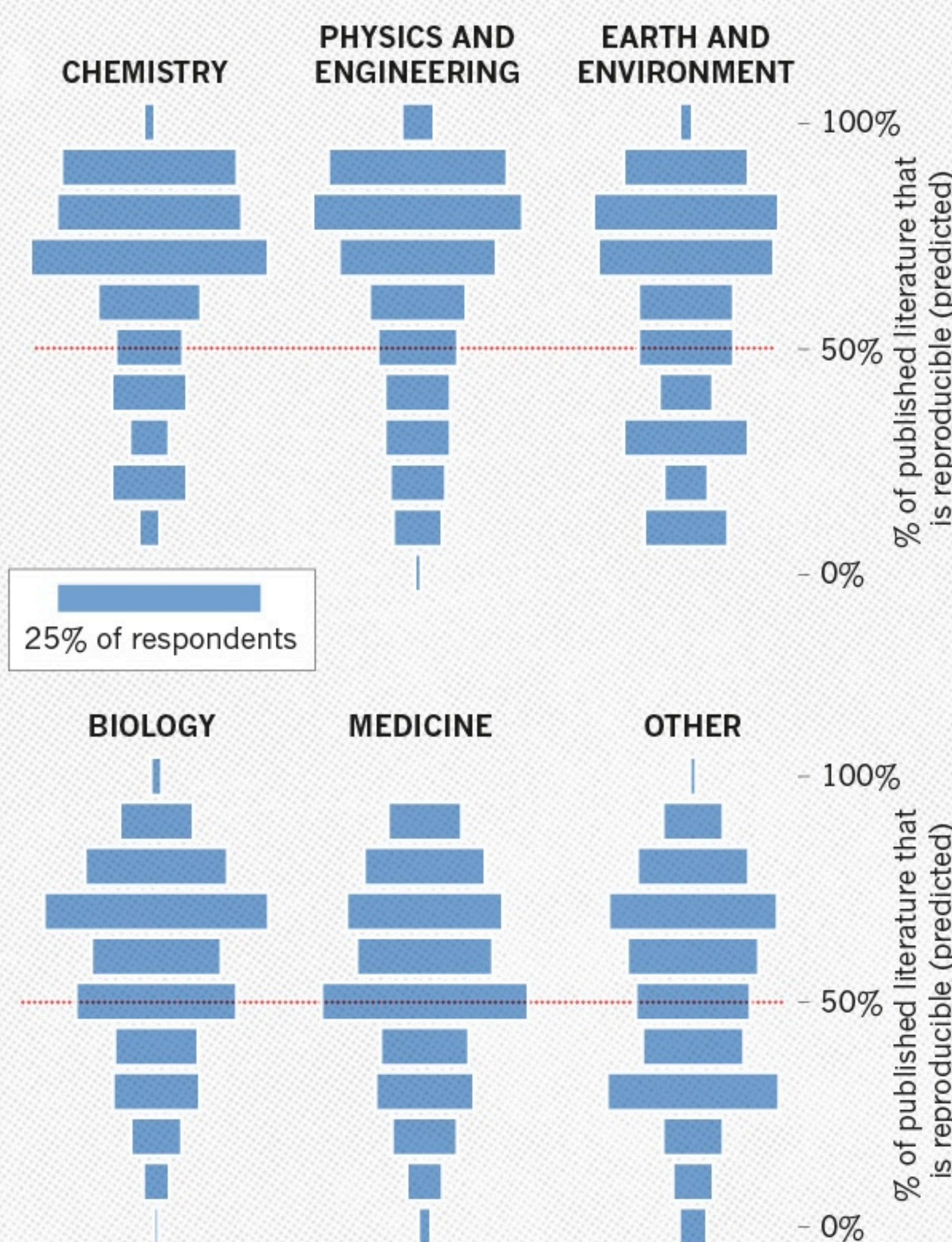
With the tools presented here, we seek to provide new possibilities to record previous studies, facilitate data-sharing, improve experiment reproducibility and usage of deep learning toolkits.

## REFERENCES

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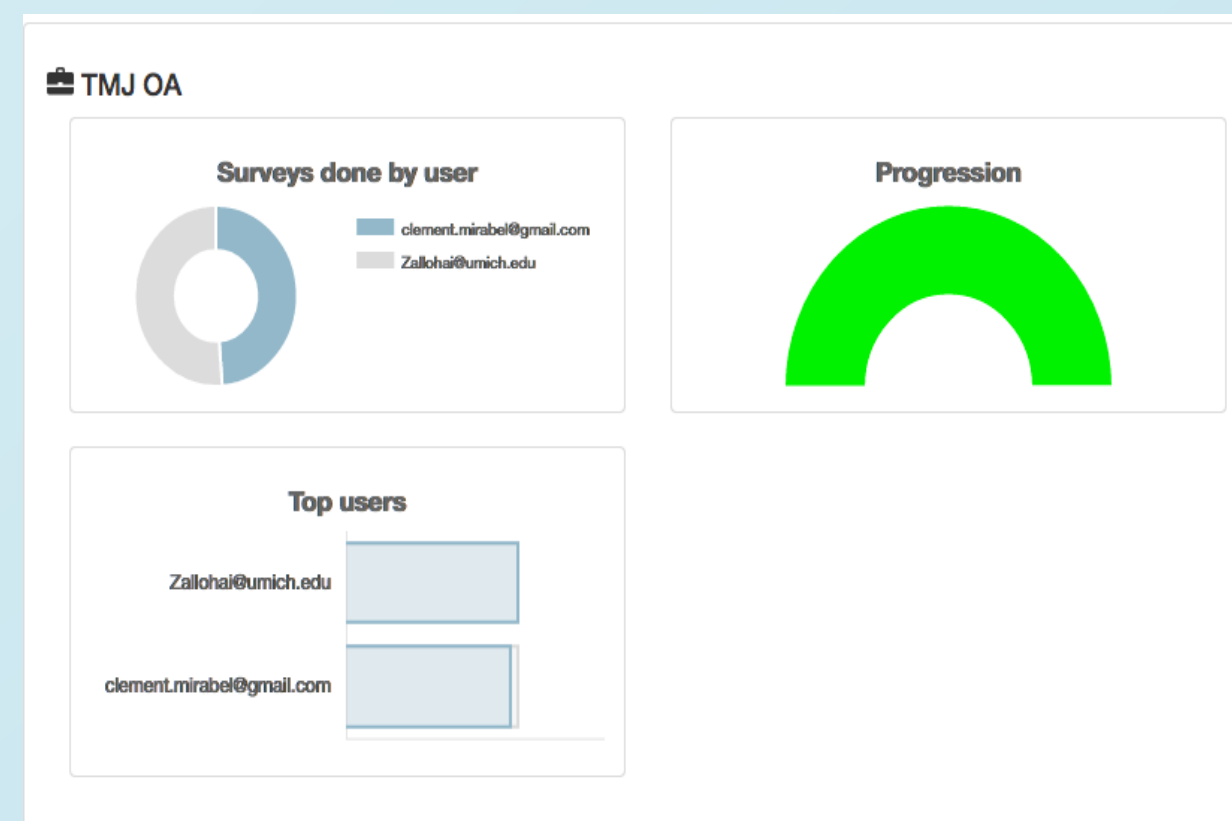
### HOW MUCH PUBLISHED WORK IN YOUR FIELD IS REPRODUCIBLE?

Physicists and chemists were most confident in the literature.

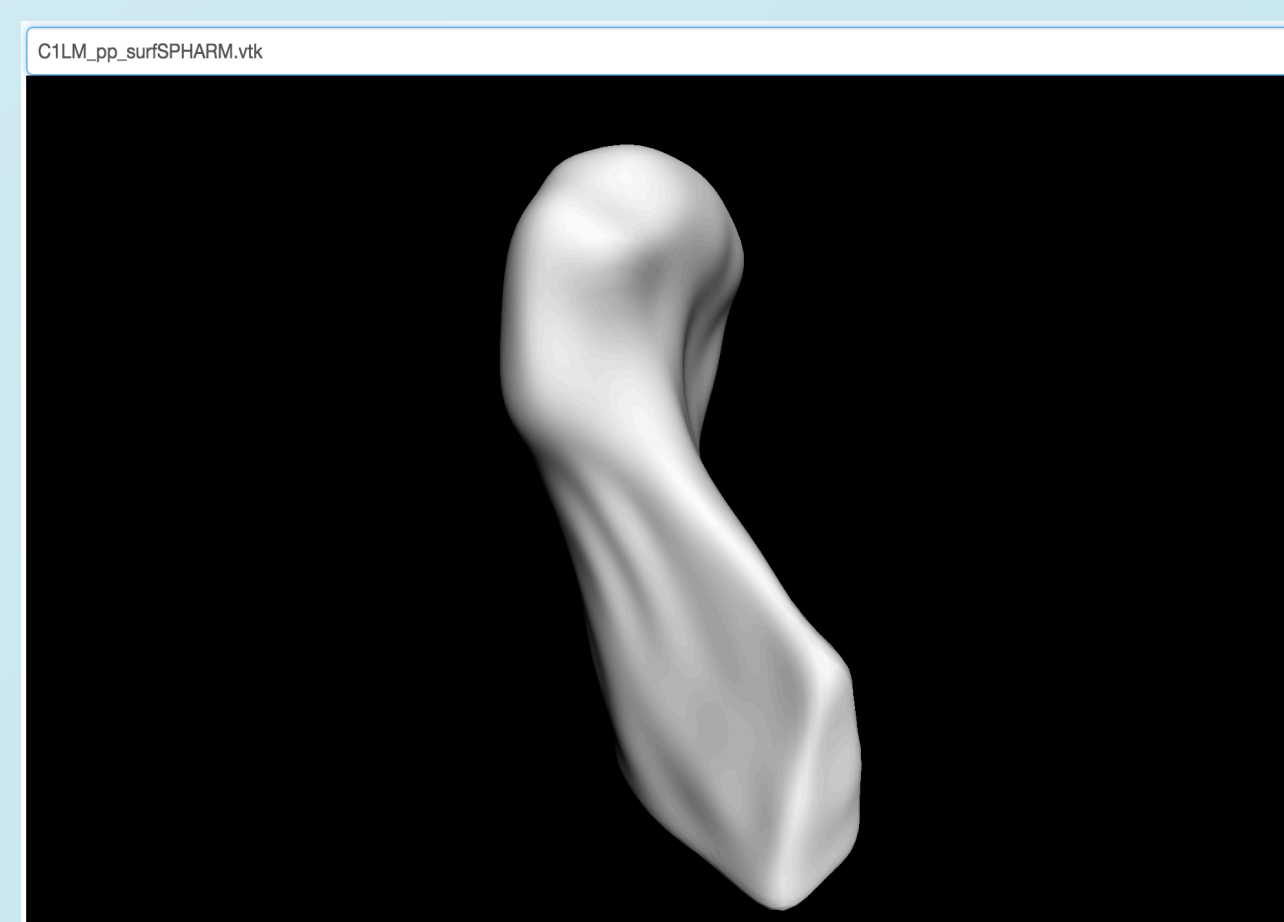


<http://www.nature.com/news/1-500-scientists-lift-the-lid-on-reproducibility-1.19970>

The form is for a survey about Temporomandibular Joint Osteoarthritis (TMJ OA). It includes a 'Submit' button, a 'Please read each question and respond accordingly. For each of the questions below circle only one response.' instruction, and a 'Would you say your health in general is excellent, very good, good, fair or poor?' question with radio button options: Excellent, Very good, Good, Fair, and Poor.

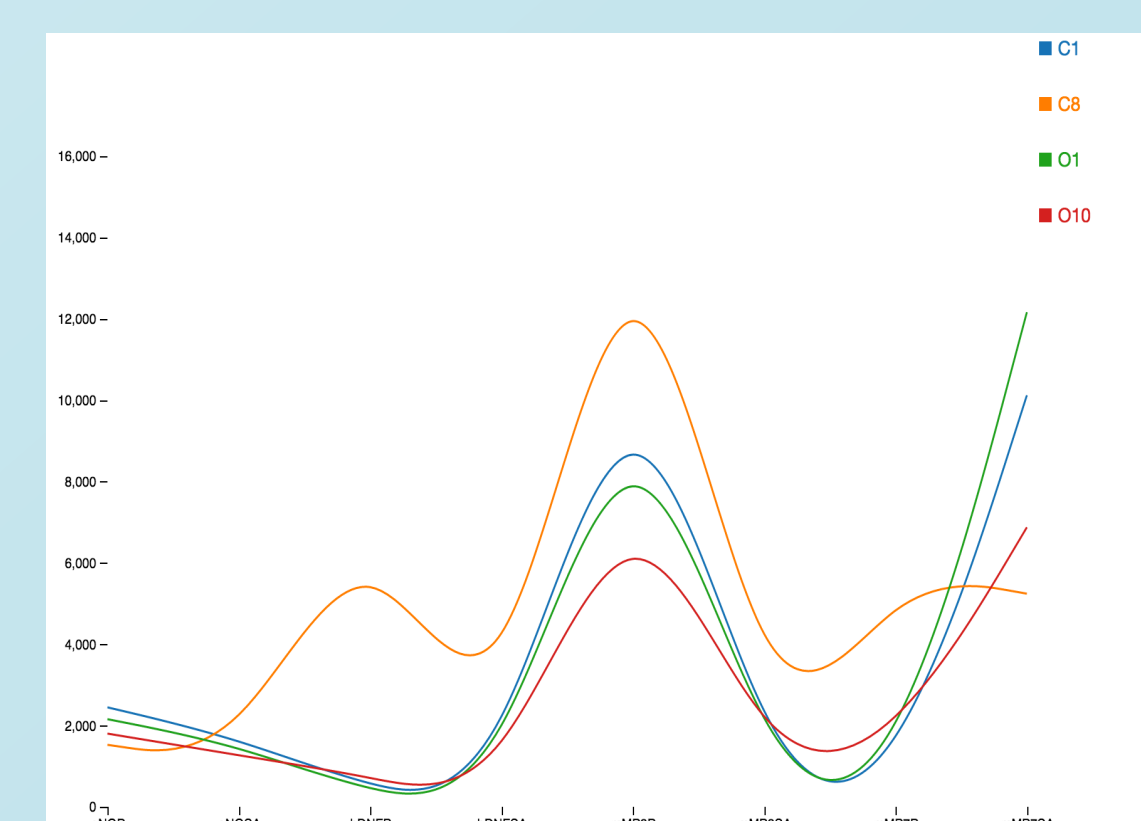


patientid	aNGP	aNGSA	bDNFP	bDNFSA
C1	2445.9	1684.8	443.8	0.5
C8	1524.5	1054.7	7839	0
O1	2154.7	1520.7	313.2	0
O10	1800.3	1265.3	747.4	0
C2	2040.4	738.3	10120.7	0



### Biological markers

Number of items: 24



The form is for downloading data. It includes a 'Download data' section with a 'Find data with:' dropdown menu. Below this, there are sections for 'Choose a destination:', 'Choose a collection:', 'Choose a patient:', and 'Choose an attachment:'. The 'Download selected attachment' button is at the bottom.