

# **Building an R-centered Reproducible Research Framework**

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# The (Recognition of the) Reproducibility Crisis is Upon Us

## Science [Home](#) [News](#) [Journals](#)

EDITORIAL

### Progress on reproducibility

**Jeremy Berg**

[+ See all authors and affiliations](#)

*Science* 05 Jan 2018:  
Vol. 359, Issue 6371, pp. 9  
DOI: 10.1126/science.aar8654

## Cell Metabolism

CROSSTALK | VOLUME 24, ISSUE 3, P348-360, SEPTEMBER 13, 2016

### Never Waste a Good Crisis: Confronting Reproducibility in Translational Research

Daniel J. Drucker [person](#) [email](#)

 **PLOS** | BIOLOGY  
FIFTEENTH ANNIVERSARY

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### Reproducible research practices, transparency, and open access data in the biomedical literature, 2015–2017

Joshua D. Wallach, Kevin W. Boyack, John P. A. Ioannidis [email](#)

Published: November 20, 2018 • <https://doi.org/10.1371/journal.pbio.2006930>

**The Washington Post**  
*Democracy Dies in Darkness*

Science

## No, science's reproducibility problem is not limited to psychology

By **Joel Achenbach**  
August 28, 2015

 **nature**  
International journal of science

Special | 18 October 2018

## Challenges in irreproducible research

# Addressing Reproducible Challenges

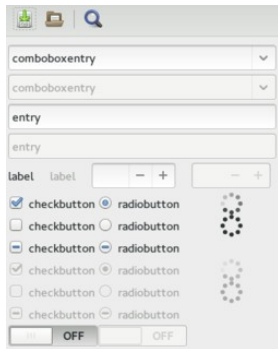
## Missing Files



Immutable  
Storage



## Untracked GUI Interactions



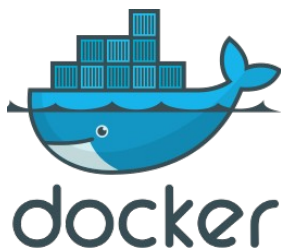
Full Scripting



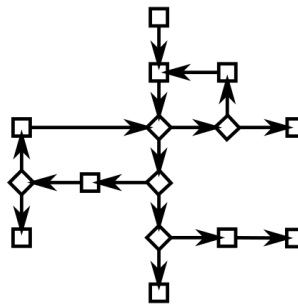
## Retired Hardware



Virtualization



## Untracked Modifications



Version  
Control



## Absent Services



Extensive  
Serialization

```
ls -lh \  
*.rds \  
*.json \  
*.sqlite \  
* +srv \  
/
```

## Researcher Turnover



Documentation

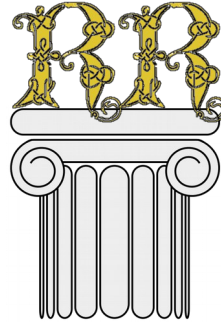


## Successes & Lessons

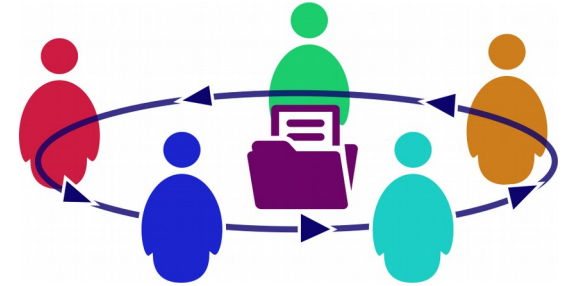
## Fully Adopted by Team of 50+, Still Evolving



# Culture is Critical



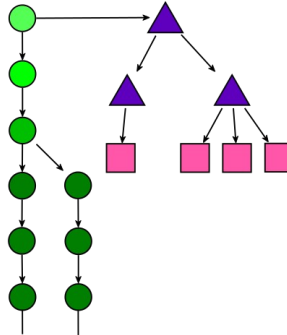
## Standards Enhance Collaboration



## Shared Code Accelerates Research



## Complete Traceability on all Analyses



## More Info on GitHub



maptracker/EARL-2018