Title: TBA

Date: Mar 27, 2018 09:45 AM

URL: http://pirsa.org/18030112

Abstract:

Pirsa: 18030112

What's not to like? Open science will fail unless it takes the costs seriously



Professor Rosie Redfield
Department of Zoology
University of British Columbia











arXiv.org

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ACADEMIA'S **BIGGEST**BLIND SPOT

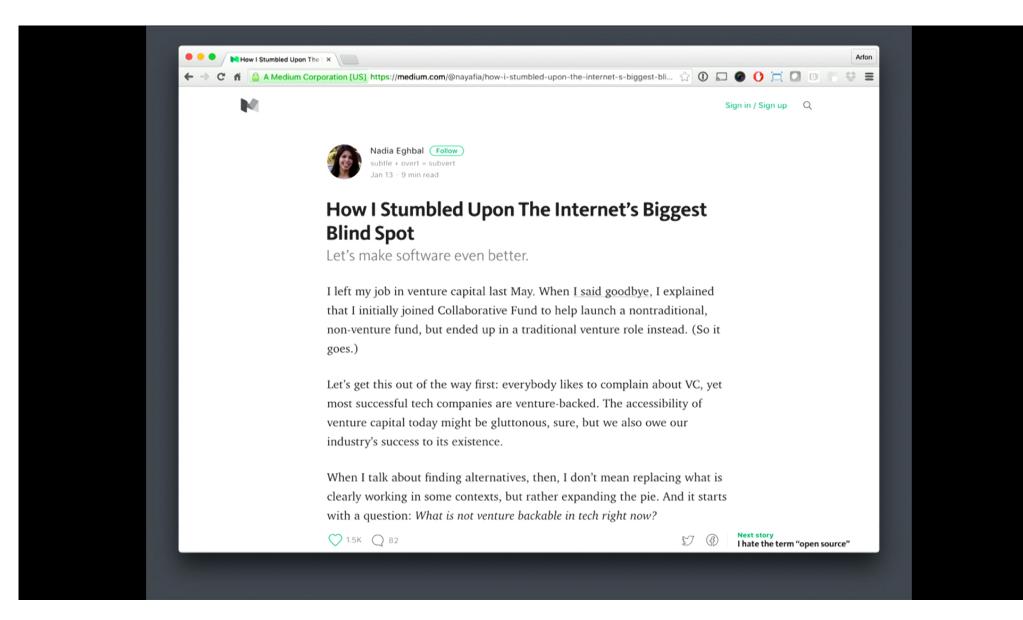
Arfon Smith (@arfon)



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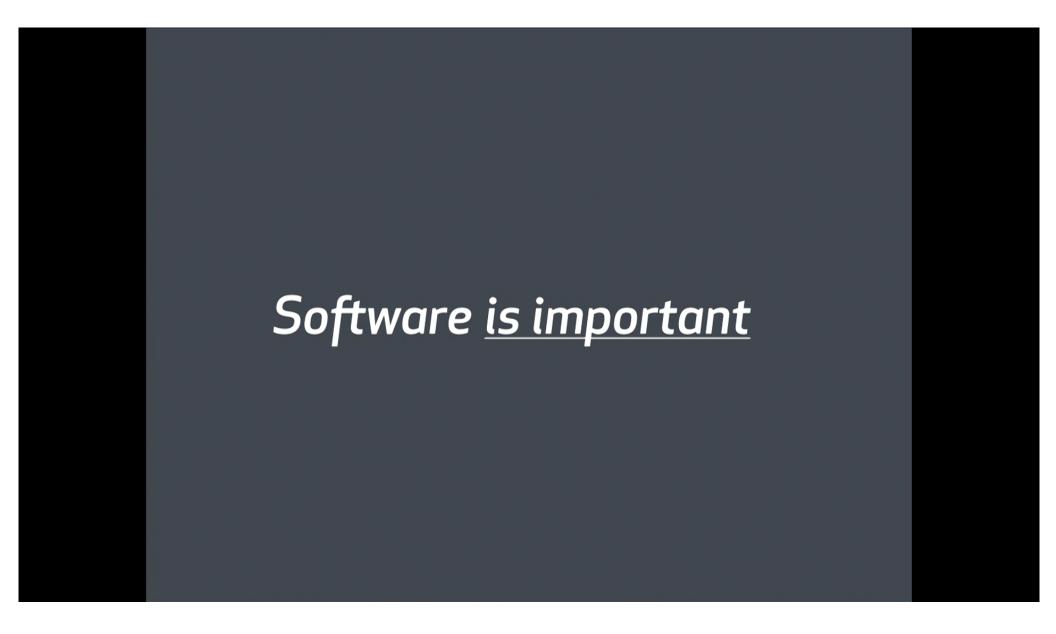
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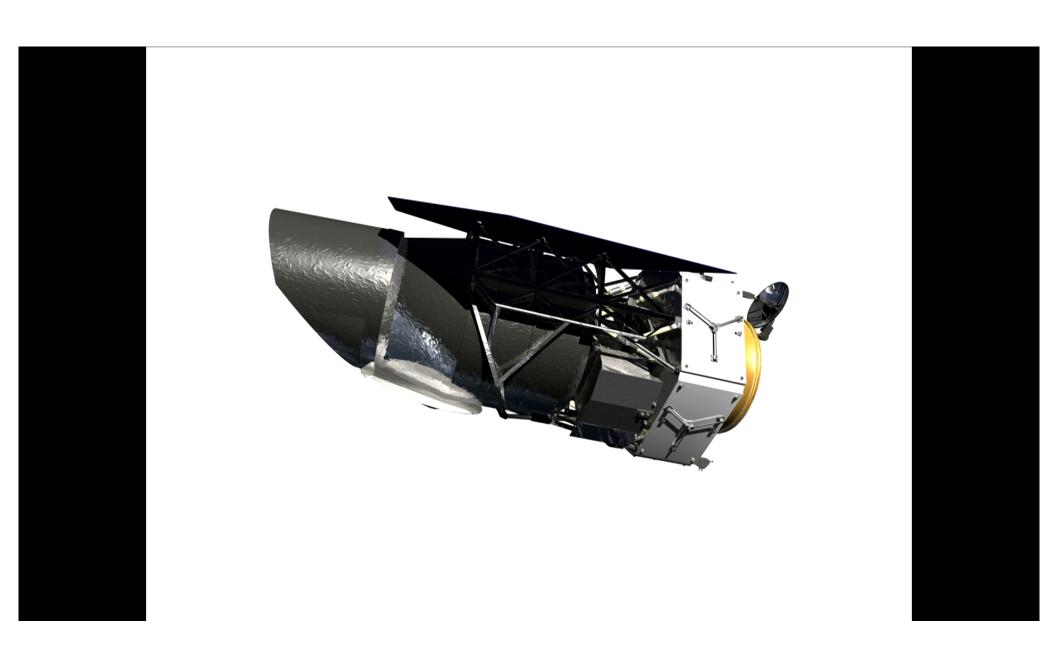
SOFTWARE TURNS A THEORETICAL MODEL INTO **QUANTITATIVE PREDICTIONS**; SOFTWARE **CONTROLS AN EXPERIMENT**; AND SOFTWARE EXTRACTS FROM RAW DATA EVIDENCE **SUPPORTING OR REJECTING A THEORY**.

Gaël Varoquaux

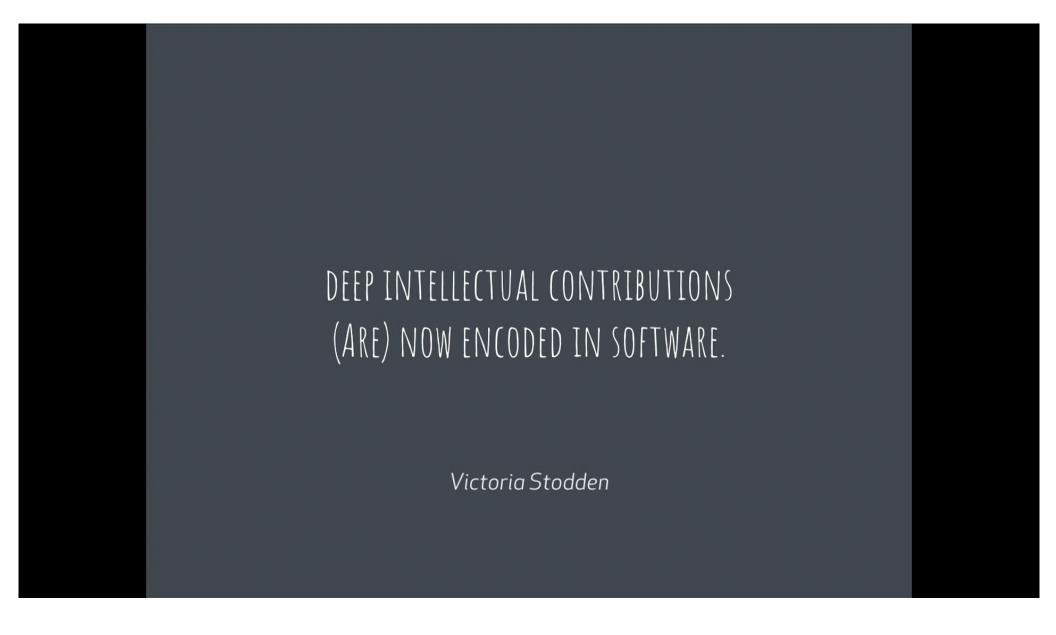
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BECOMING INCREASINGLY Software is important

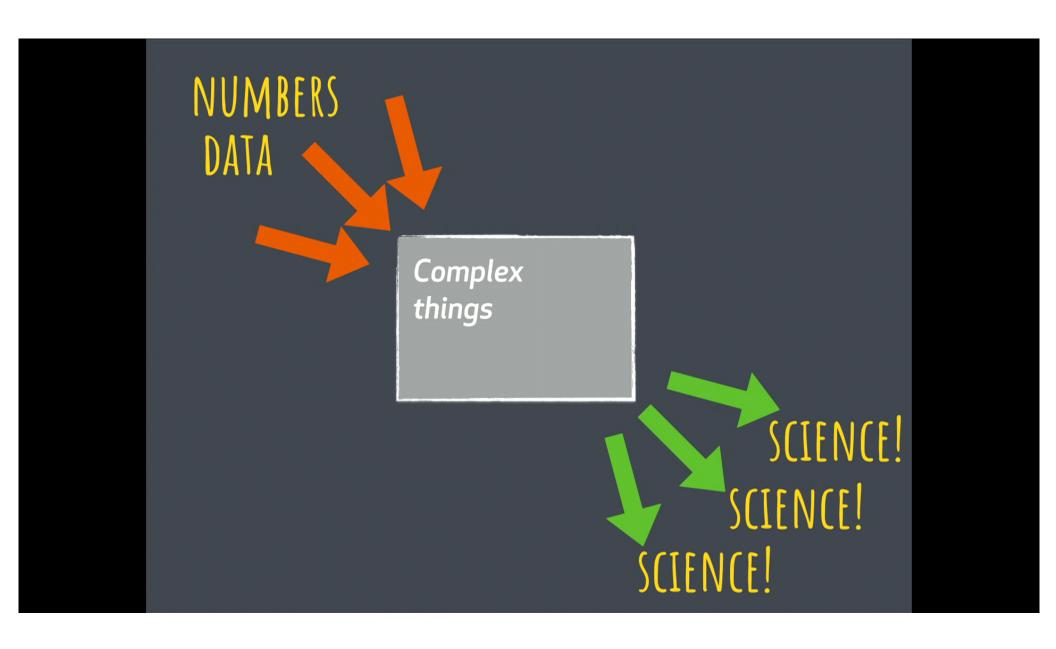
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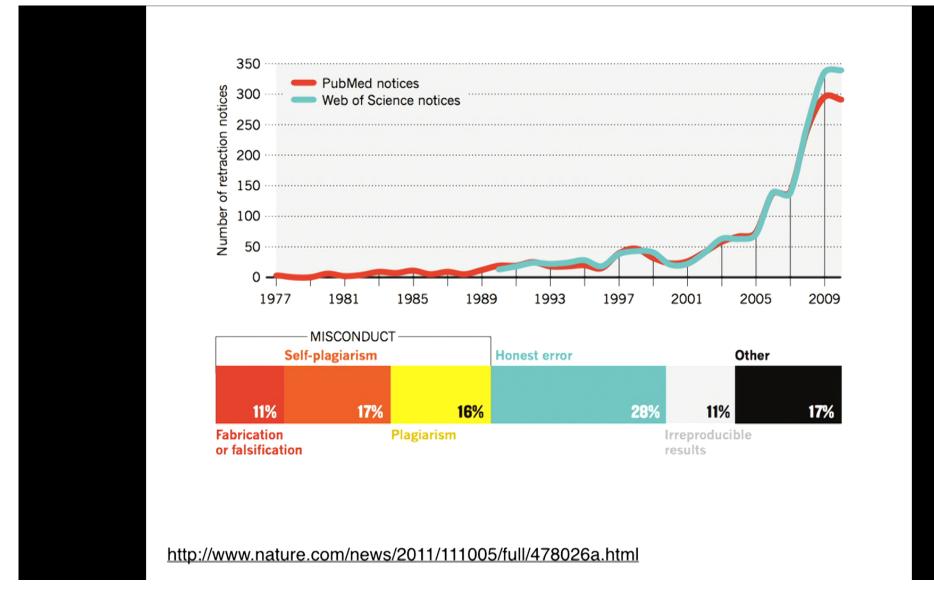
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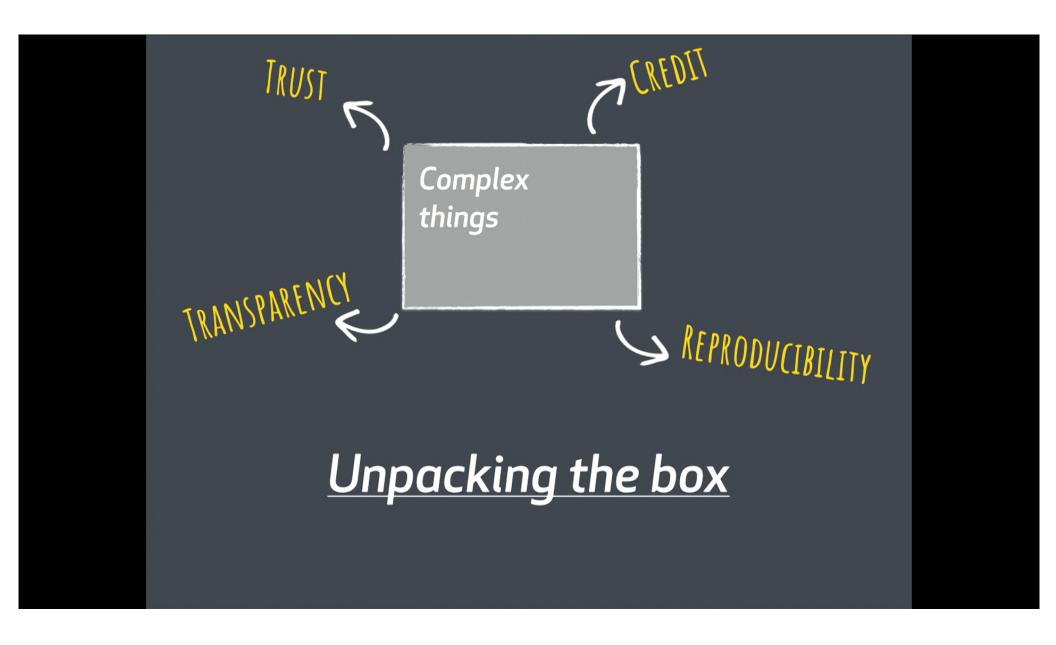
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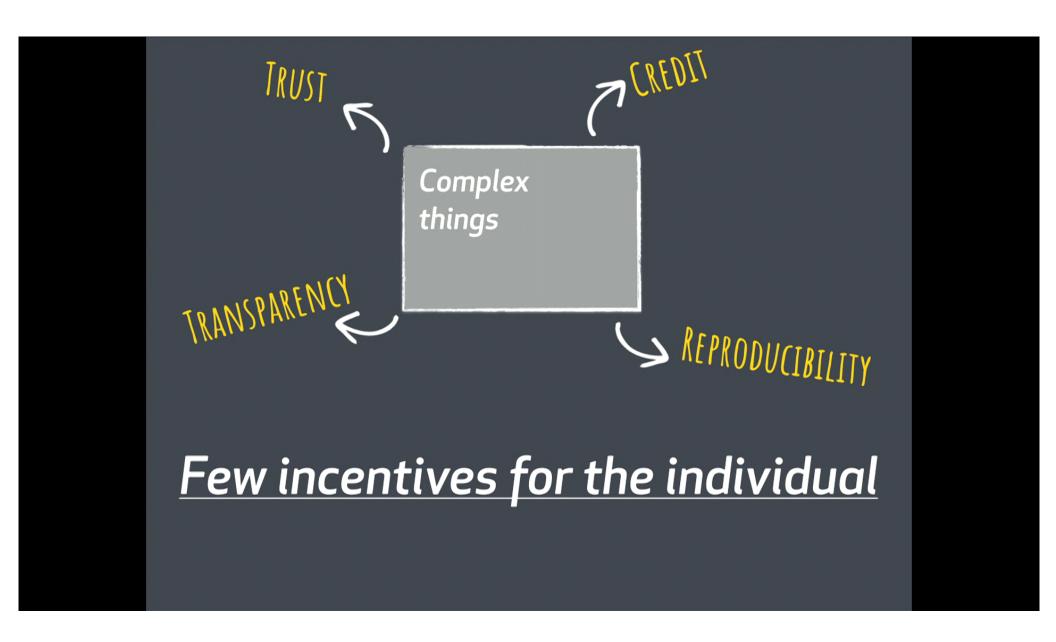
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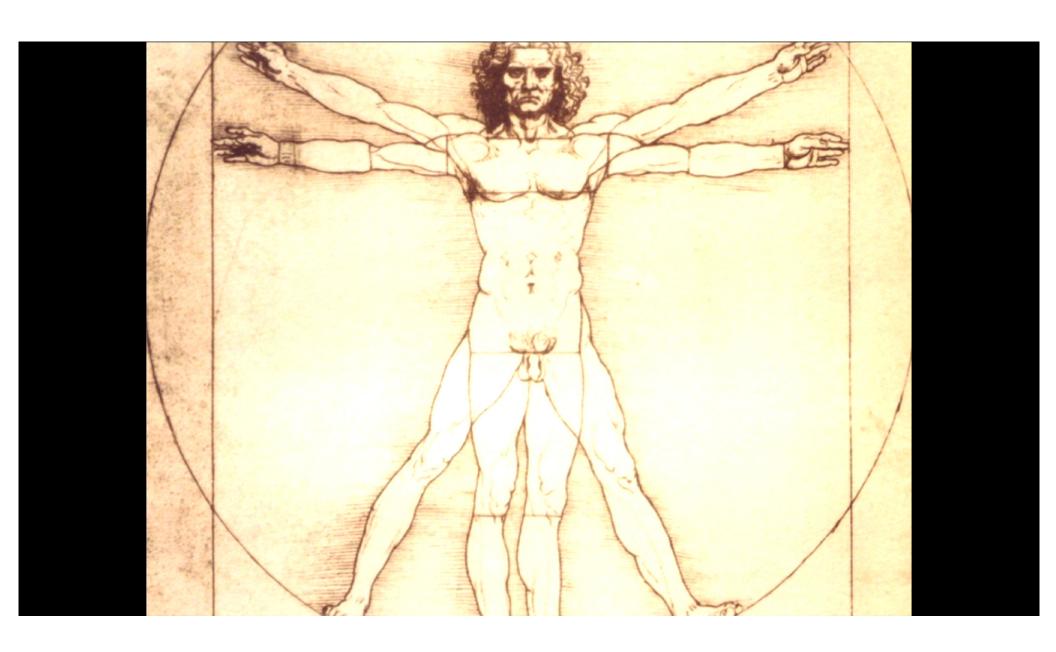
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Software can be a competitive advantage

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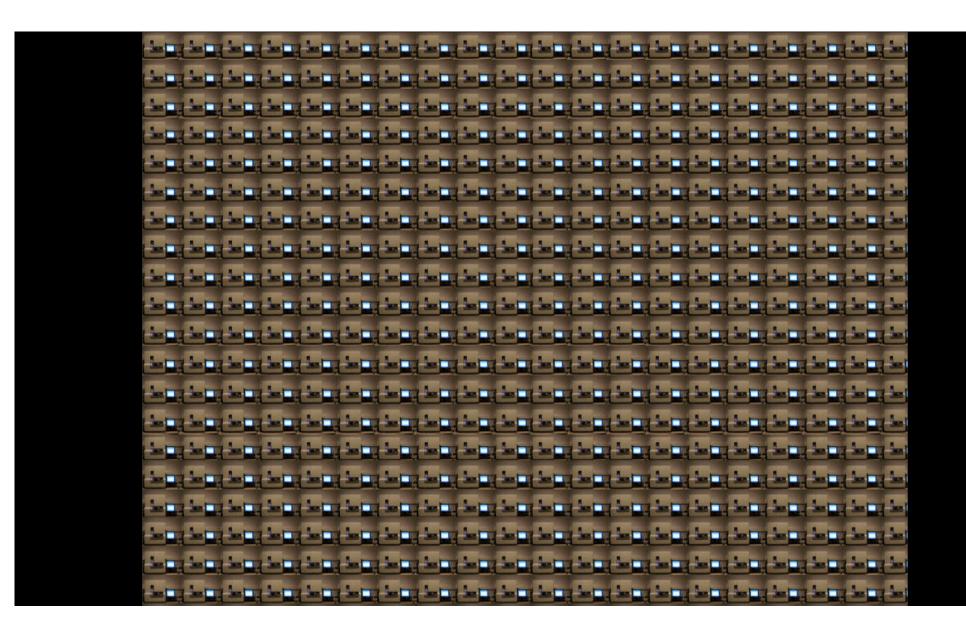
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15 YEARS

3 BILLION BASES
\$3 BILLION

Human Genome project

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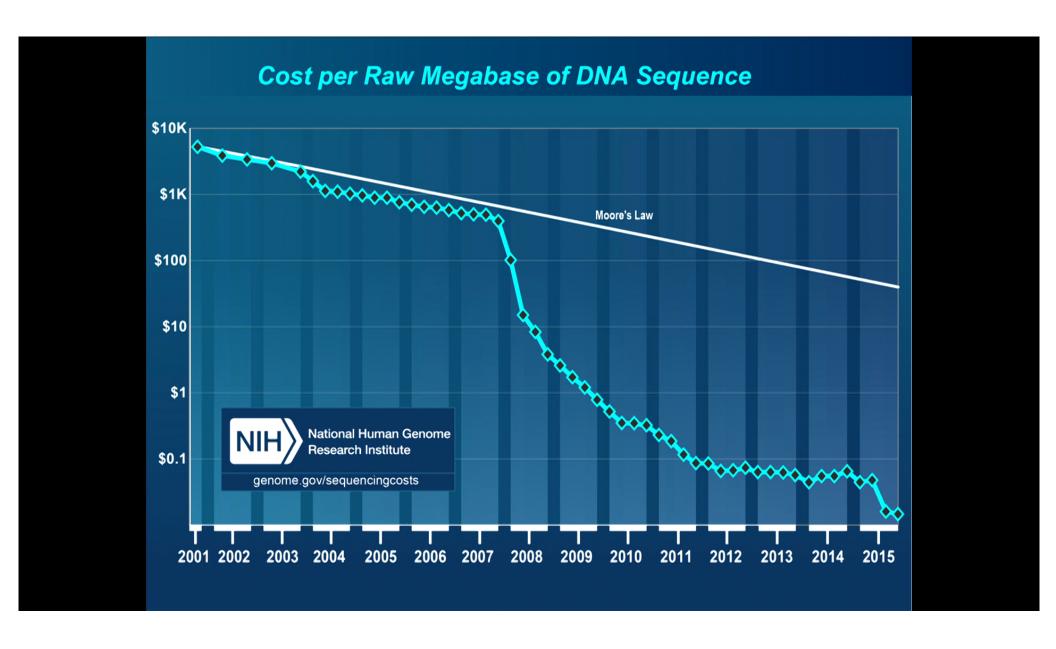


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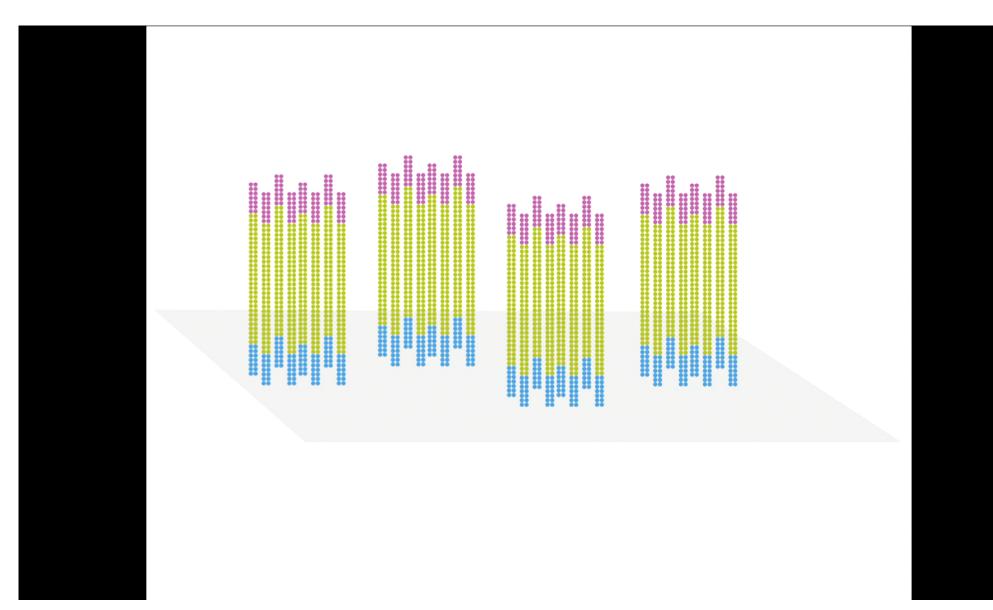
3 BILLION BASES
\$3 BILLION
\$3 BILLION
5000 PERL MODULES

Human Genome project

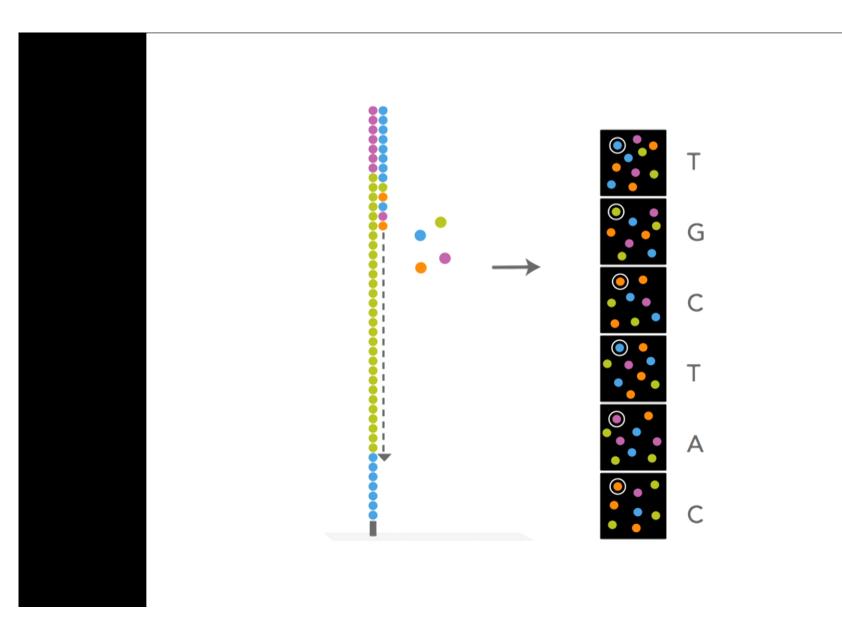
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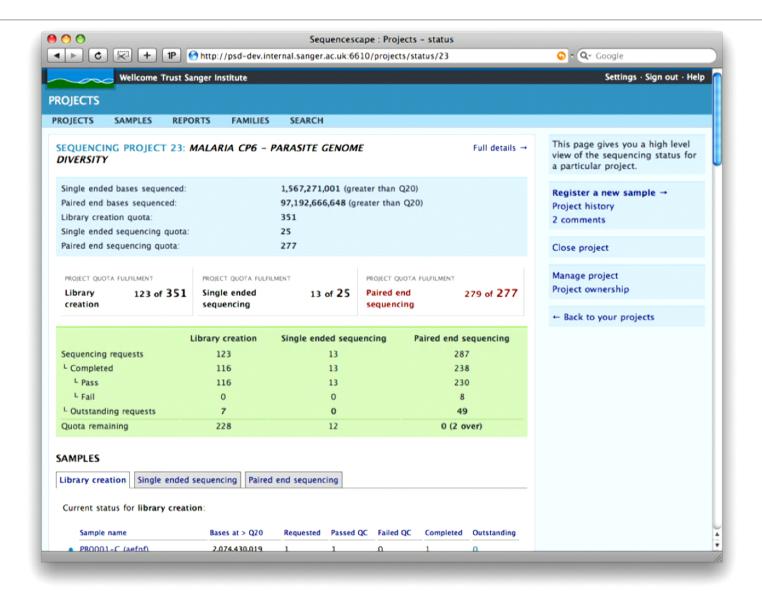
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Change was the only constant

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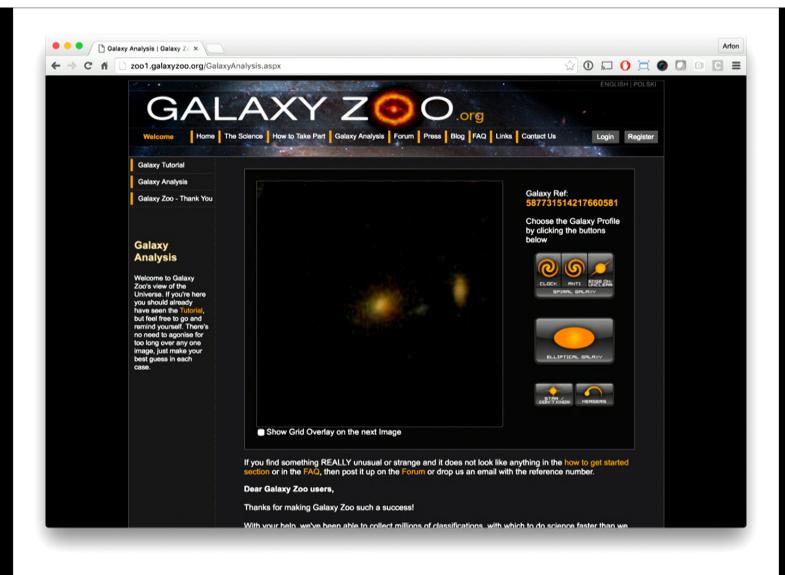


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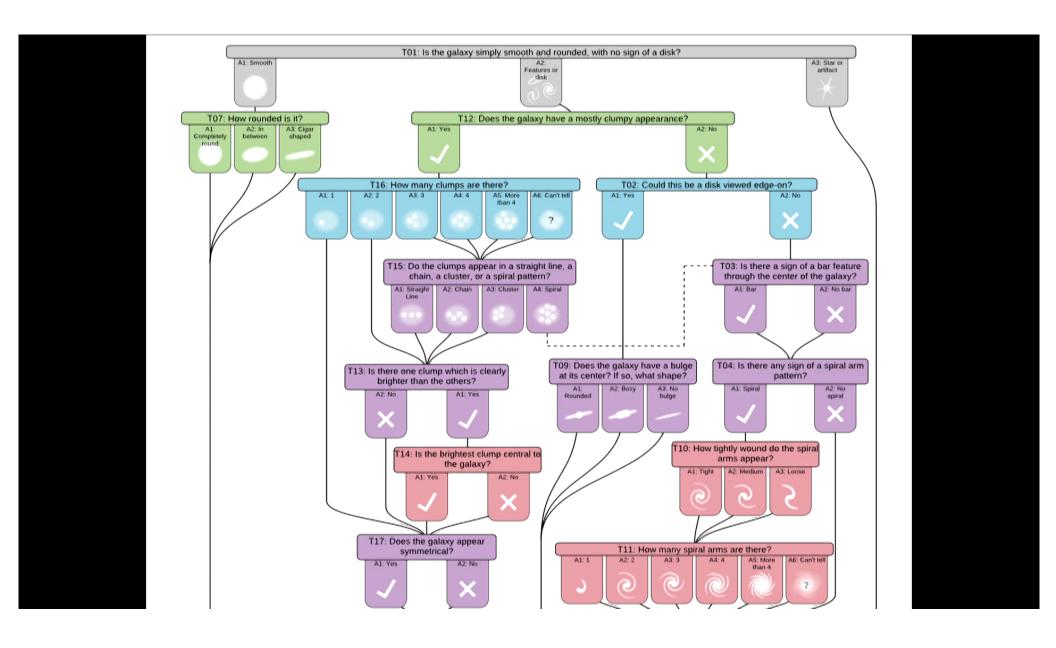
1 MILLION GALAXIES 300,000 PEOPLE TWO POSTDOCS & A STUDENT

<u>Galaxy Zoo</u>

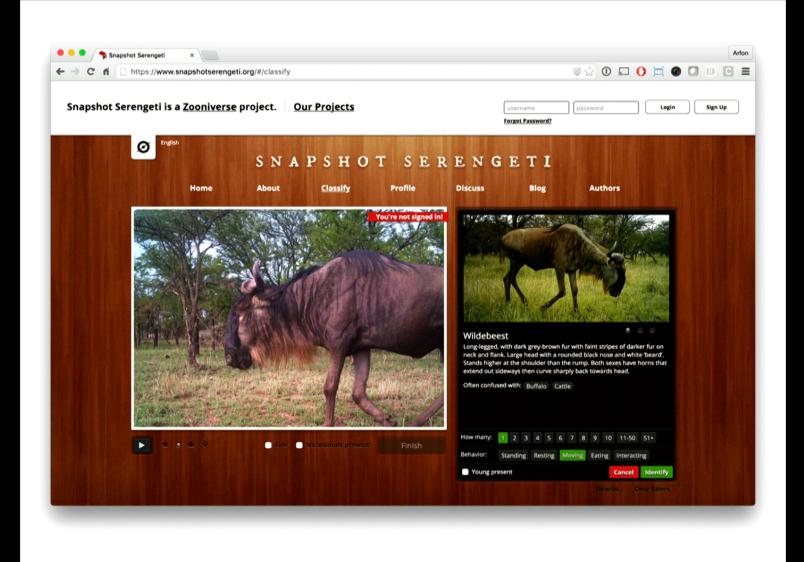
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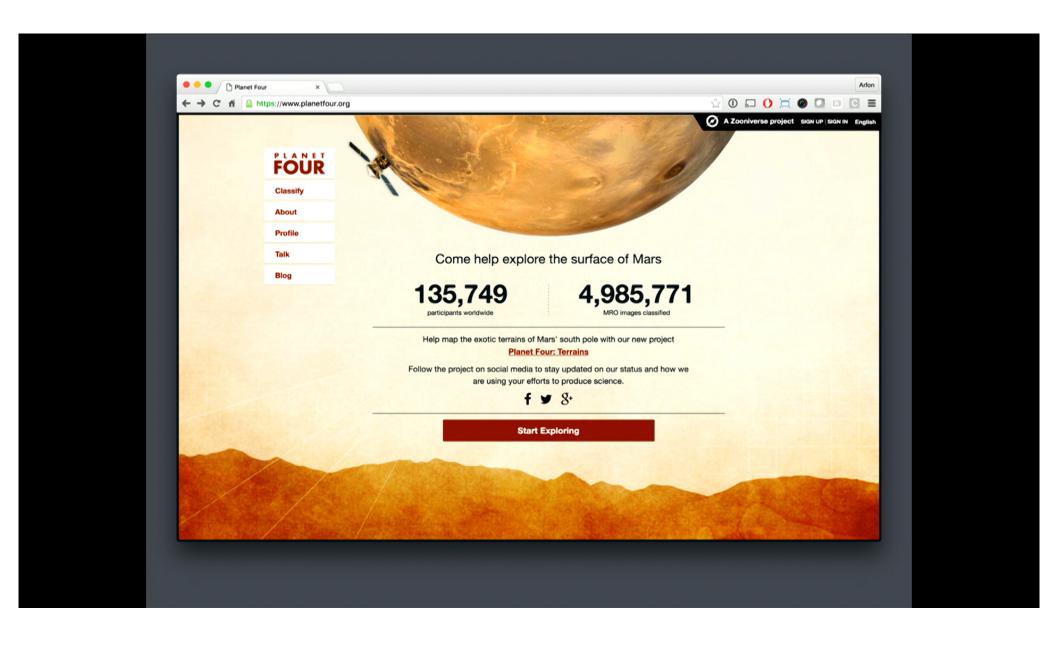
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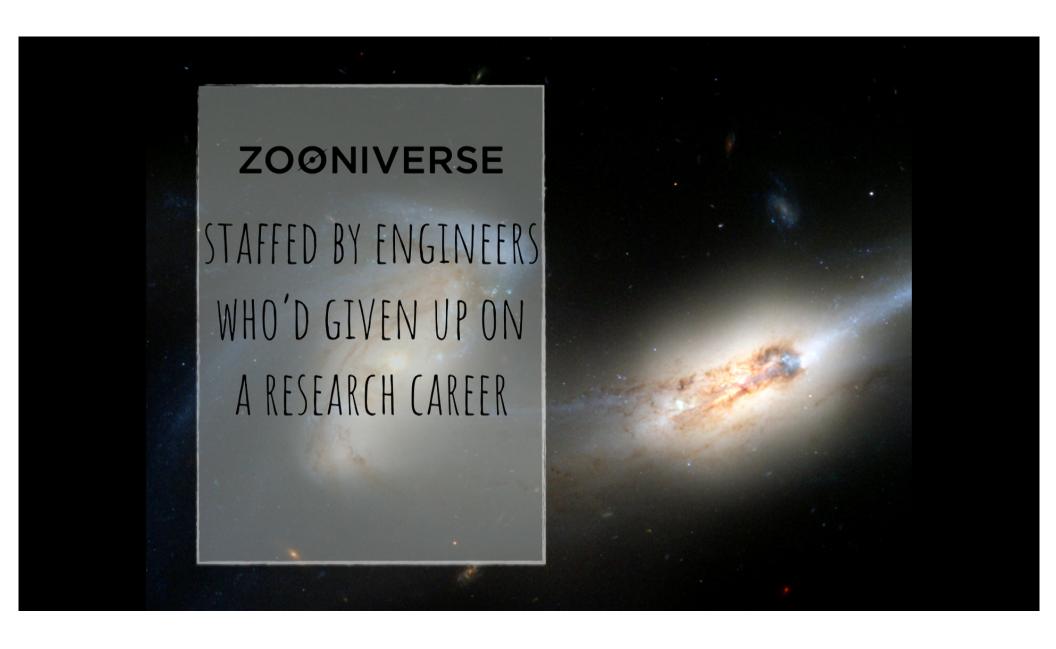


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SCALABLE/FAST FLEXIBLE DOMAIN MODEL HIGHLY AVAILABLE CHEAP

Zooniverse

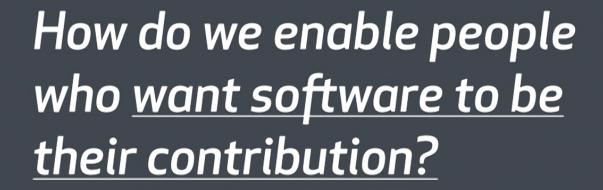
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BECOMING INCREASINGLY Software is important

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THE SKILLS REQUIRED TO BE A SUCCESSFUL SCIENTIFIC RESEARCHER ARE INCREASINGLY INDISTINGUISHABLE FROM THE SKILLS REQUIRED TO BE SUCCESSFUL IN INDUSTRY.

Jake VanderPlas

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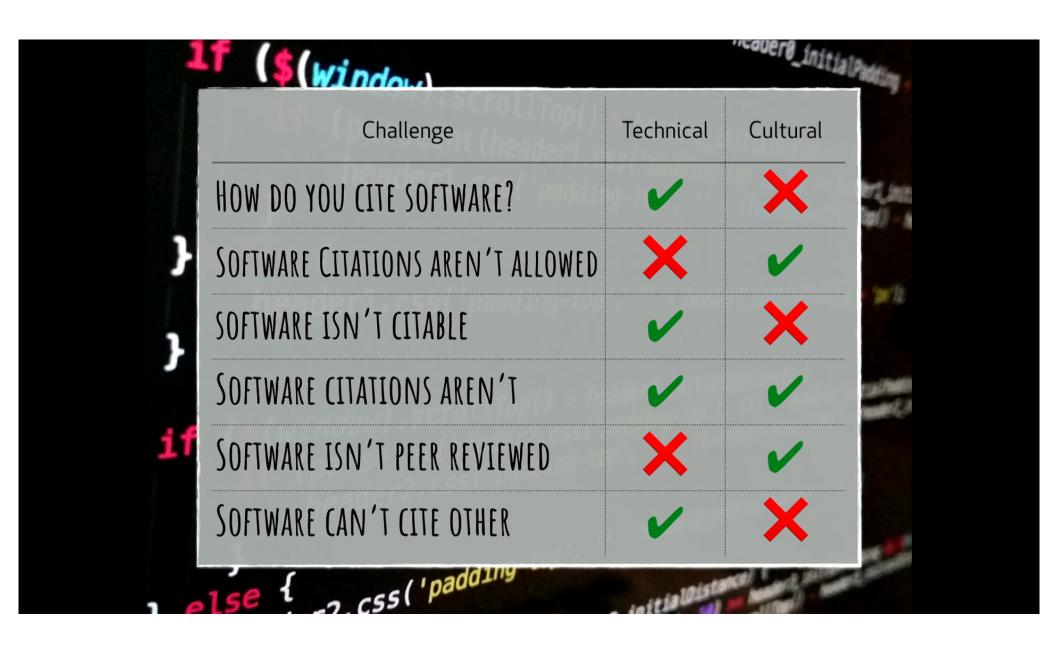


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WE MUST FIND A WAY TO LEGITIMIZE SOFTWARE AS A FORM OF SCHOLARSHIP.

Phil Bourne, Director for Data Science, NIH

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SELF-SERVICE (INDIVIDUAL)
SELF-SERVICE (GROUPS)
EXTERNAL (ECOSYSTEM)

Three categories of solutions

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Solution #1

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We now have something to cite!

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BUT: It's a ton of work...

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And what about authorship?

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Many papers = citation dilution

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Solution #2

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TO SHOW WE'VE DONE OUR RESEARCH TO CREDIT THE WORK OF OTHERS TO ENRICH THE SCHOLARLY RECORD TO AVOID PLAGIARISM

Why do we cite?

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Smith et al., My Awesome Codes, v1.0.0, http://github.com/arfon/awesome-codes

Solution #2

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http://github.com/arfon/awesome-codes

Solution #2

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BUT: Many journals don't allow it

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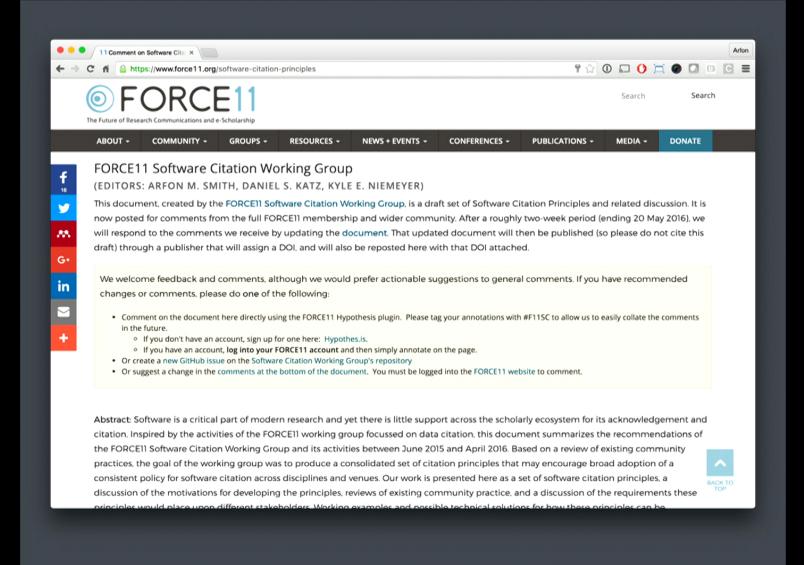
And have citation limits...

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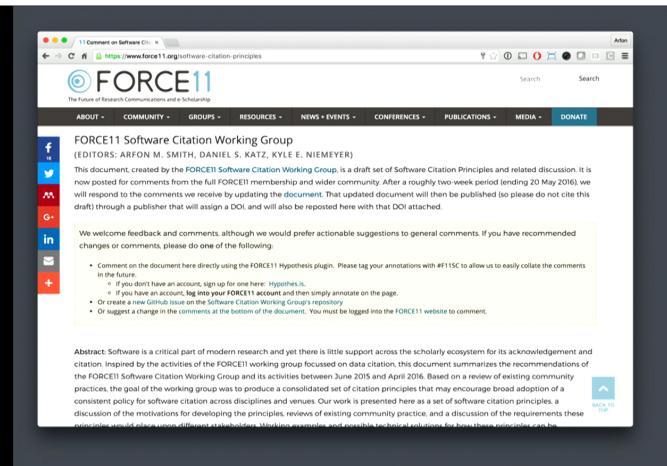


And indexers don't count them

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https://www.force11.org/software-citation-principles

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Already an incredible ecosystem around software

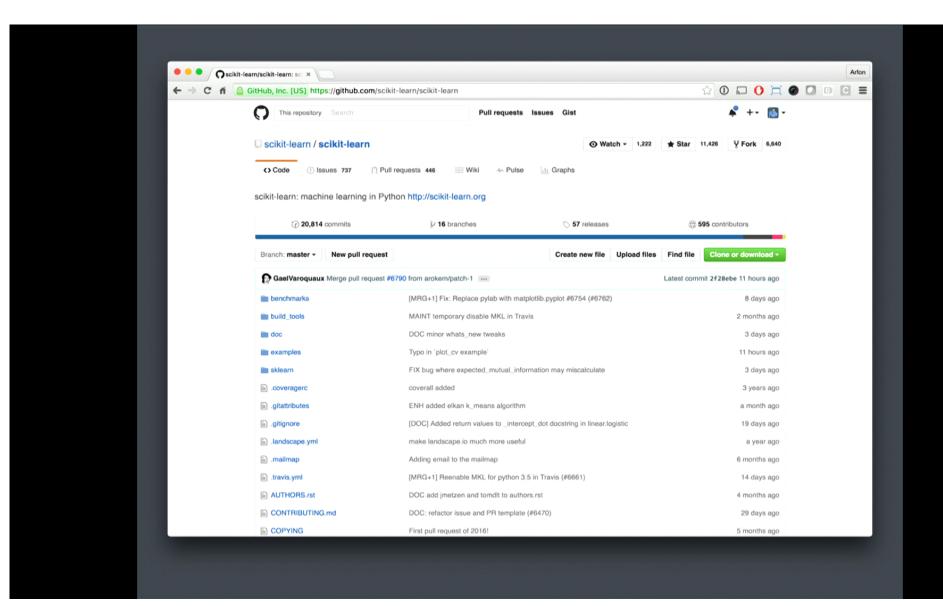
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What does (open source) software do <u>especially well?</u>

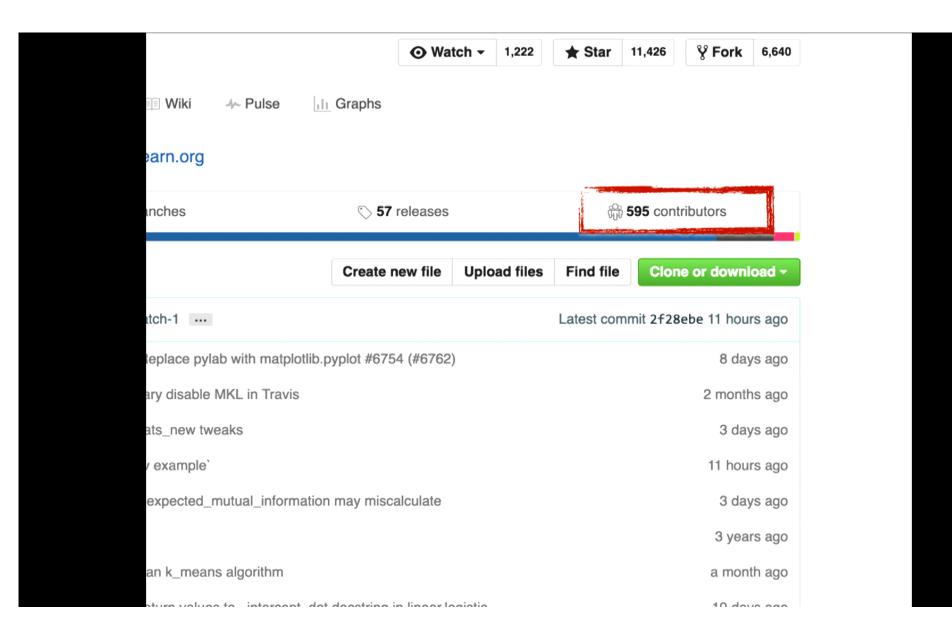
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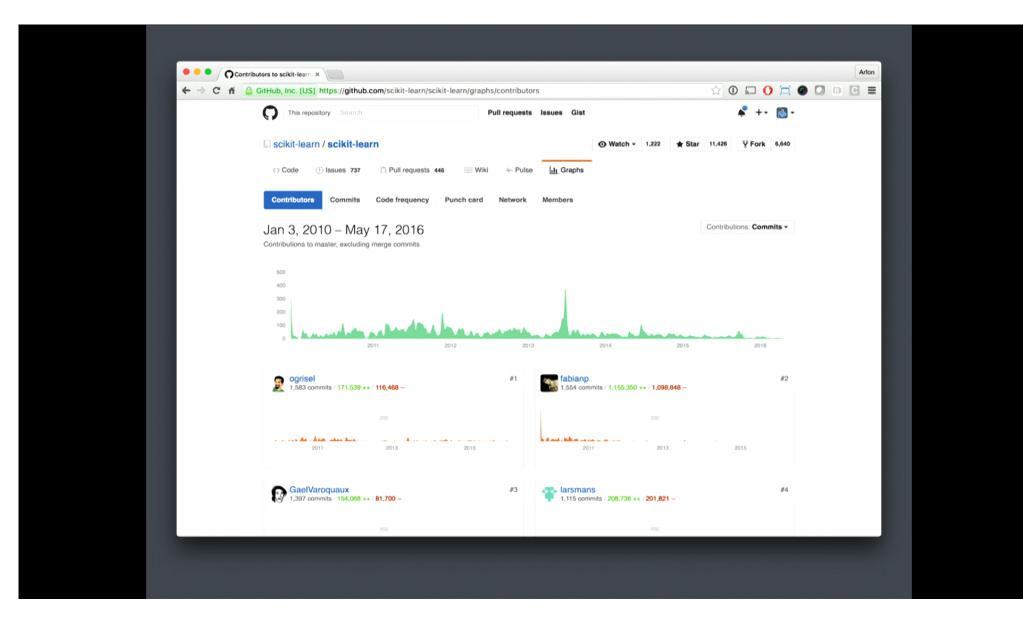
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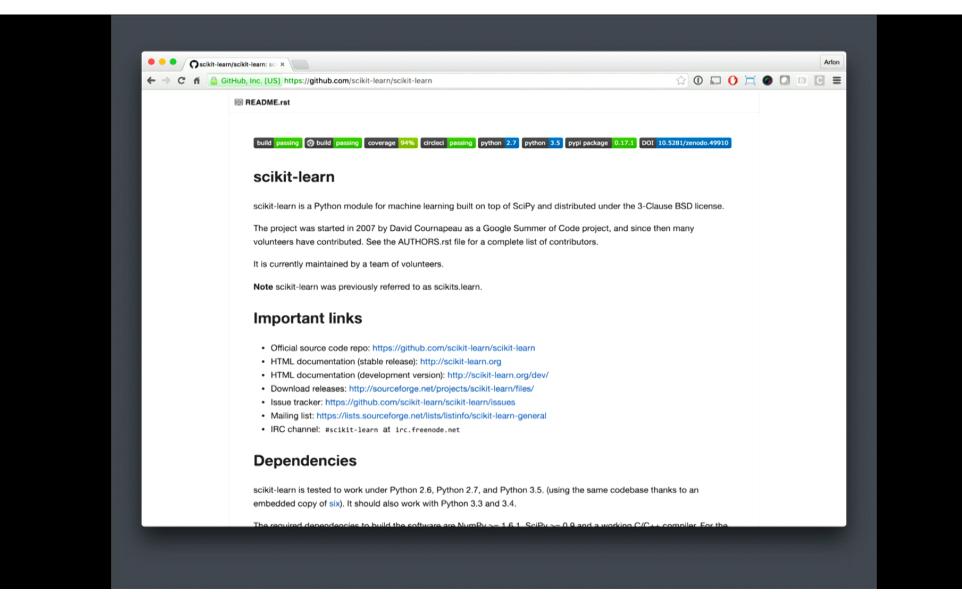
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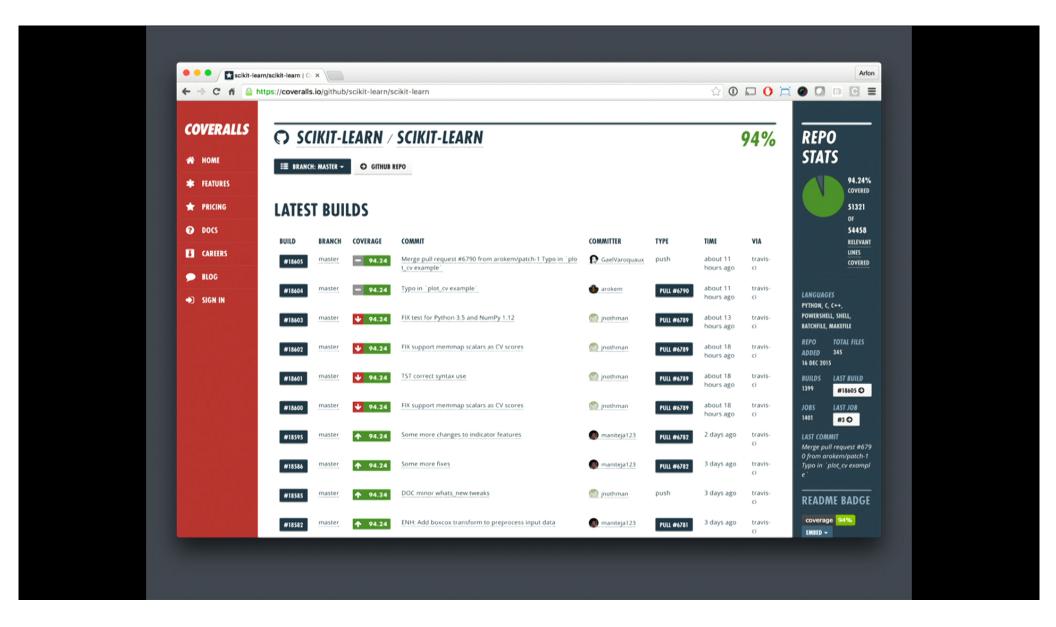
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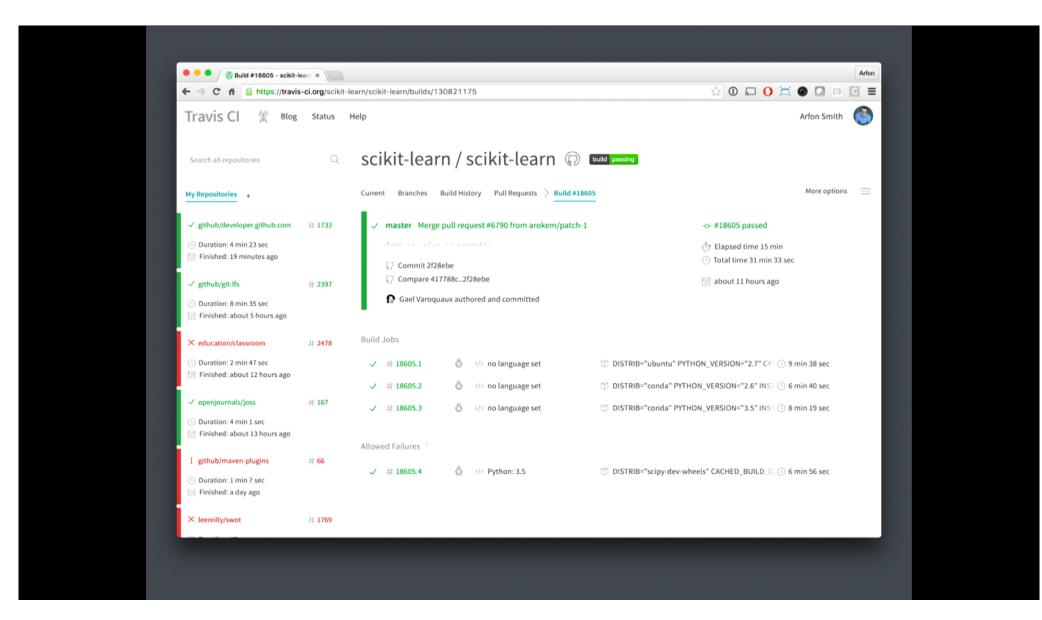
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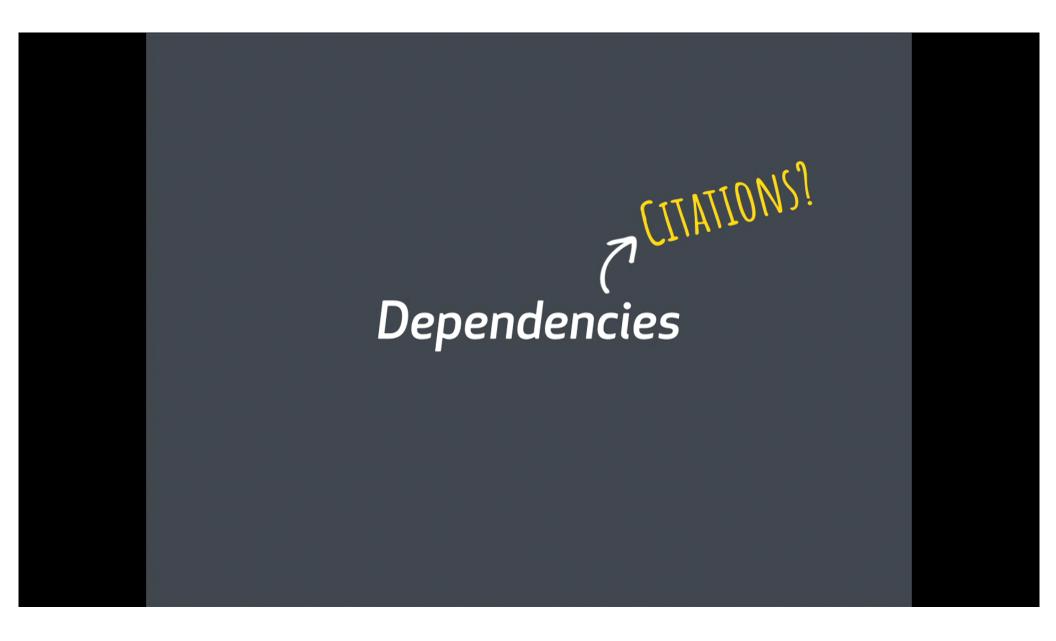
Pirsa: 18030112 Page 66/88



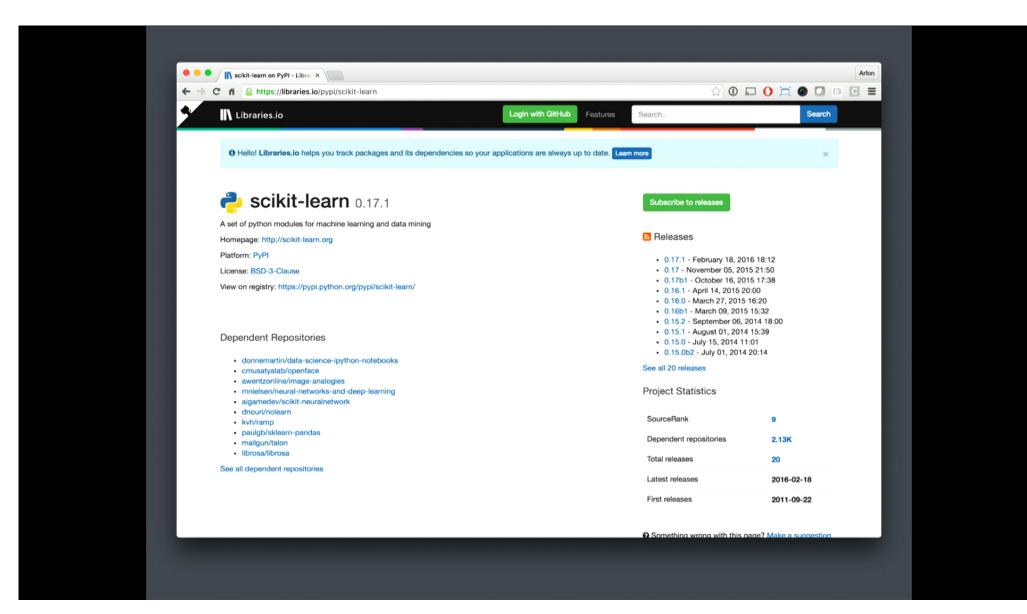
Pirsa: 18030112 Page 67/88



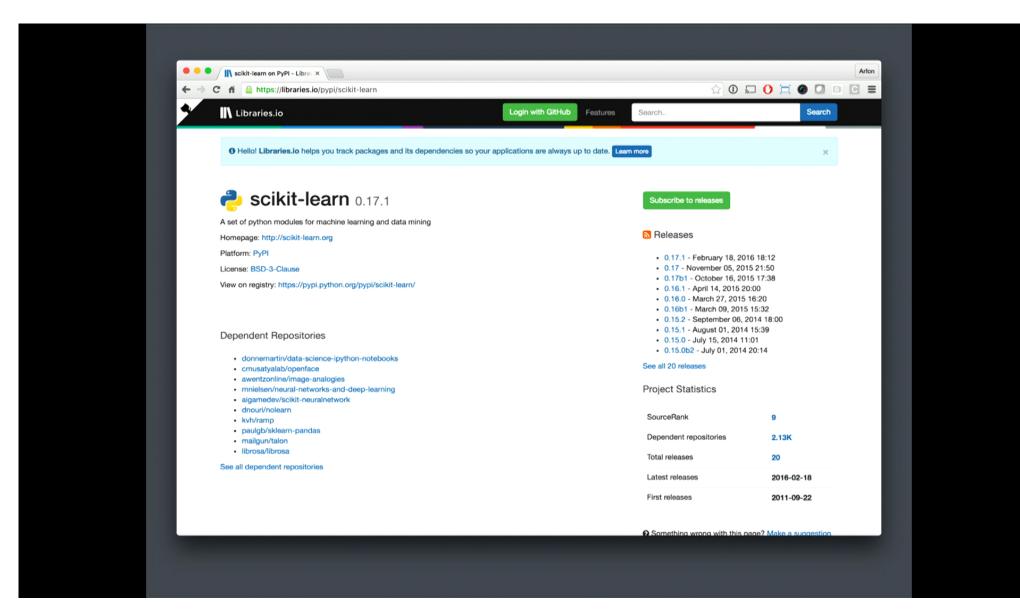
Pirsa: 18030112 Page 68/88



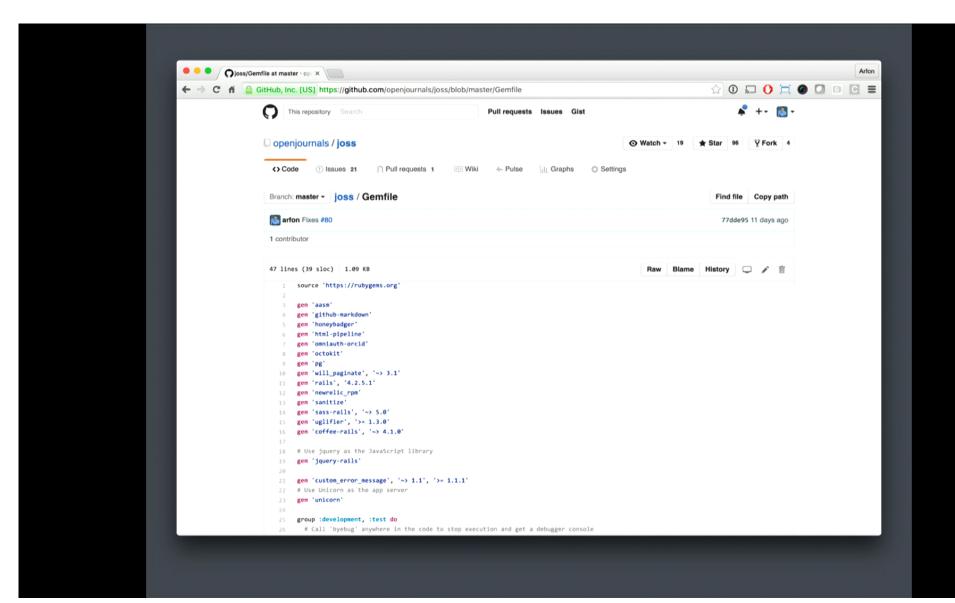
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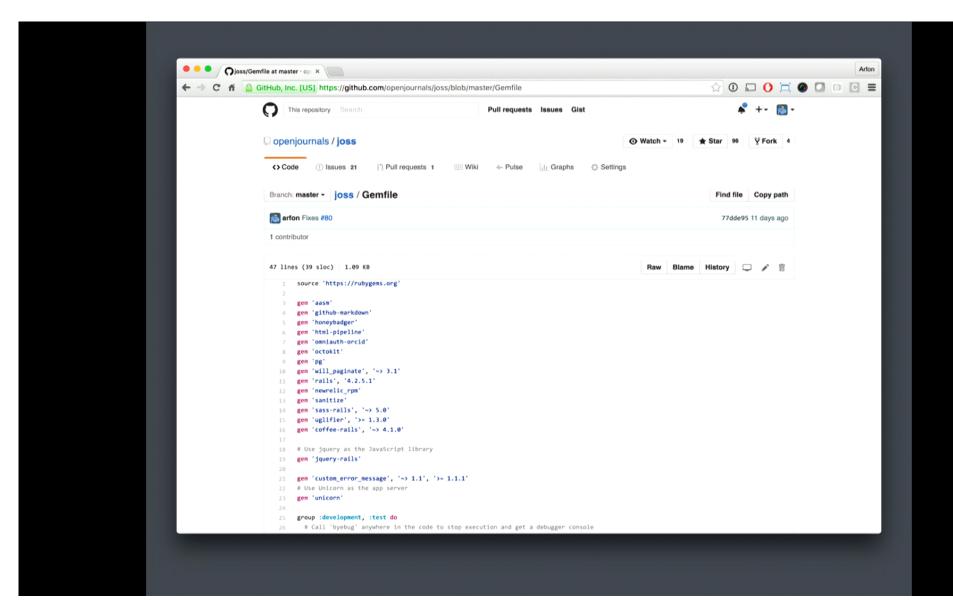
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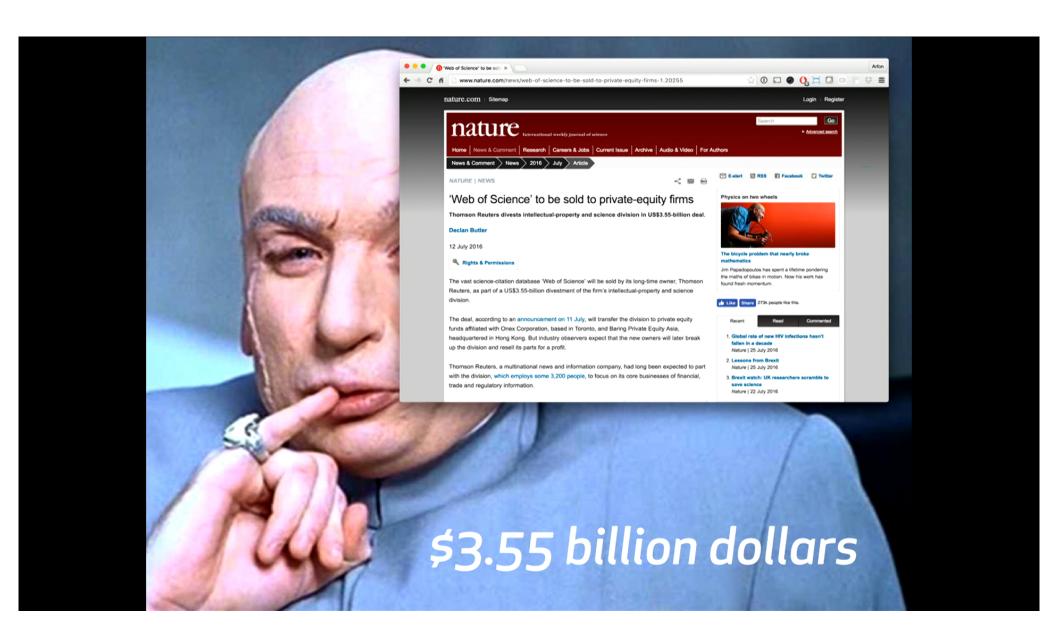
What if we built a better academic credit model?

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PAPER-CENTRIC GO BEYOND THE H-INDEX

Solution #3

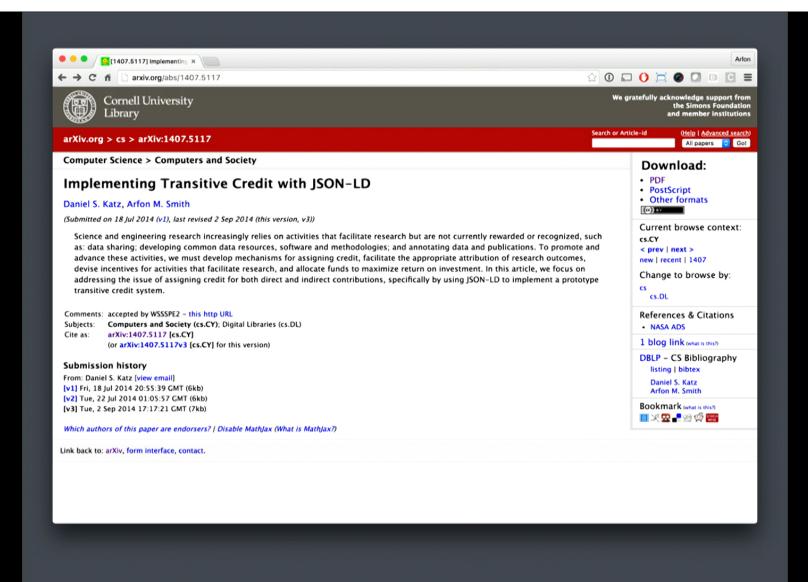
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Pirsa: 18030112 Page 76/88

PAPERS
DATASETS
SOFTWARE
CITE ANYTHING
Richer citations

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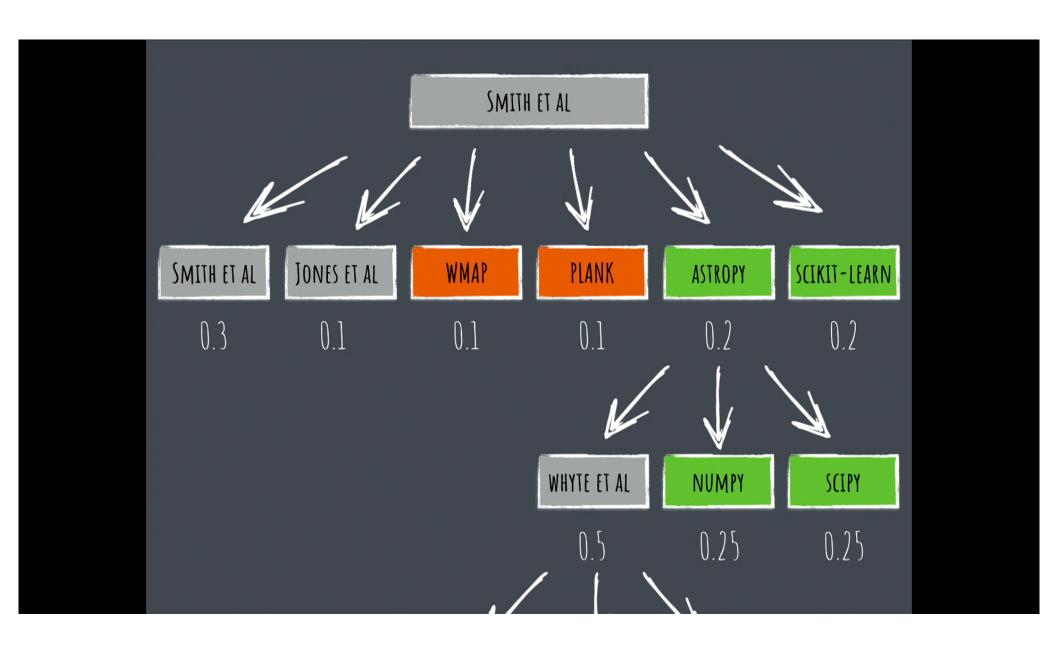


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SMITH ET AL **Transitive Credit**

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Dan Katz



Pirsa: 18030112 Page 80/88

PAPER-CENTRIC GO BEYOND THE H-INDEX

Hard because we have no control

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ELEVATING THE ROLE OF SOFTWARE

Solution #4

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ELEVATING THE ROLE OF SOFTWARE

Solution #4

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ASK FOR AUTHORS TO INCLUDE SOFTWARE WHEN REVIEWING PAPERS

Individual actions

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INCLUDE NON-PAPER CONTRIBUTIONS WHEN ASSESSING CANDIDATES

Individual actions

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TAKE A COURSE (OR SEND YOUR STUDENT ON ONE)

Individual actions

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SHARE YOUR SOFTWARE ON GITHUB:-)

Individual actions

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WRITE SOFTWARE PAPERS MAKE IT POSSIBLE TO CITE SOFTWARE GO BEYOND THE H-INDEX ELEVATING THE ROLE OF SOFTWARE

All the fixes

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