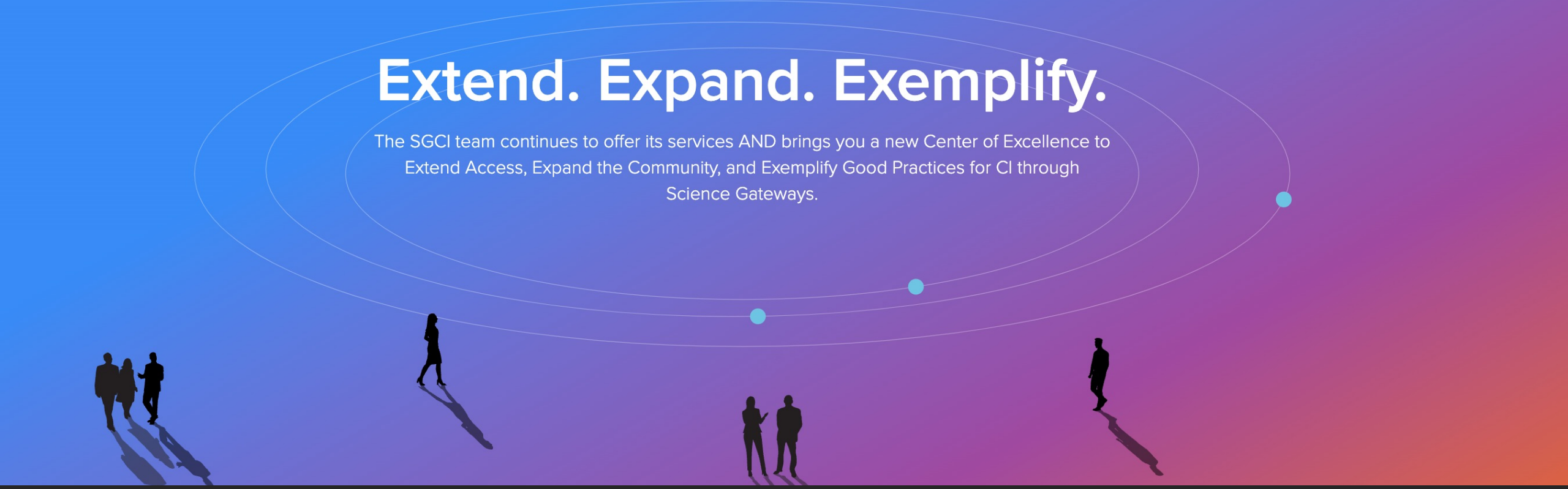
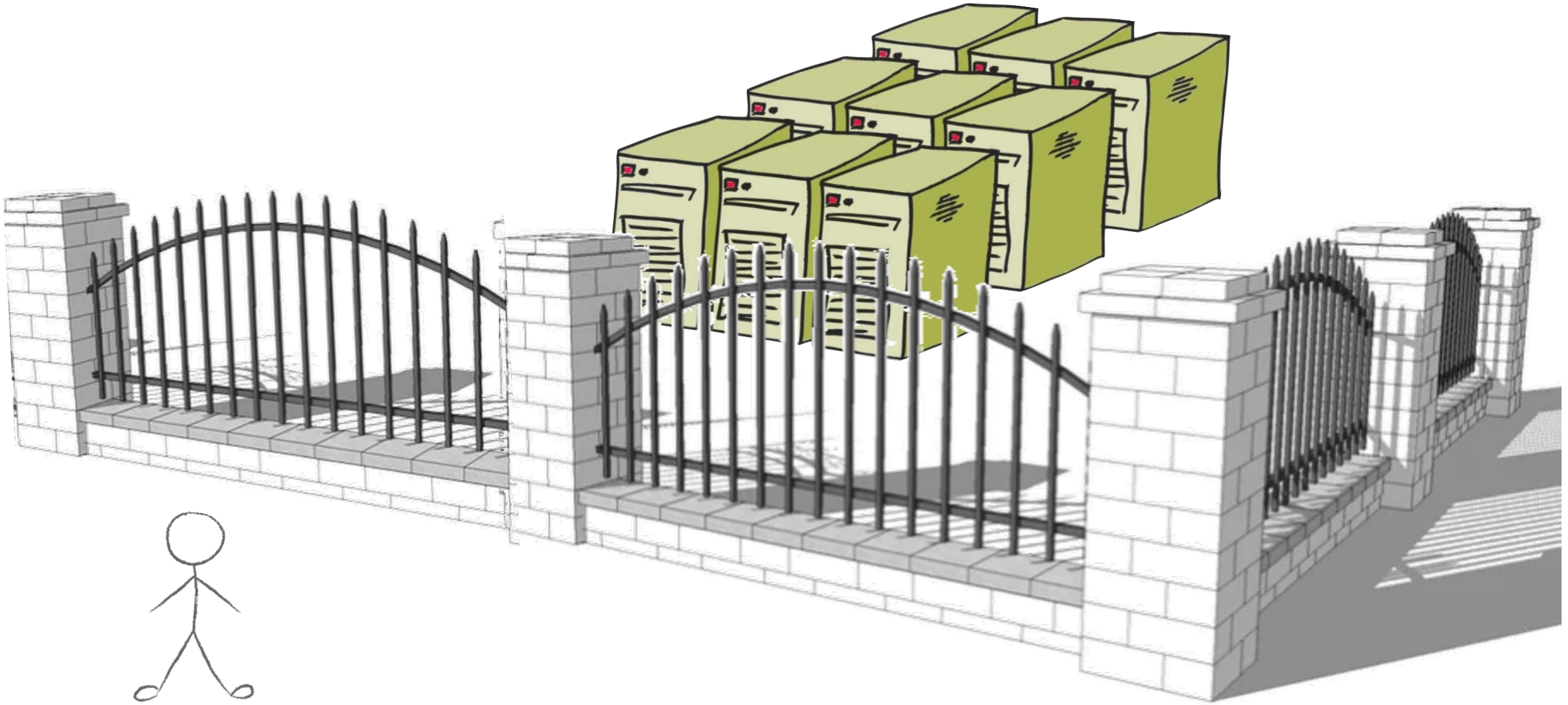


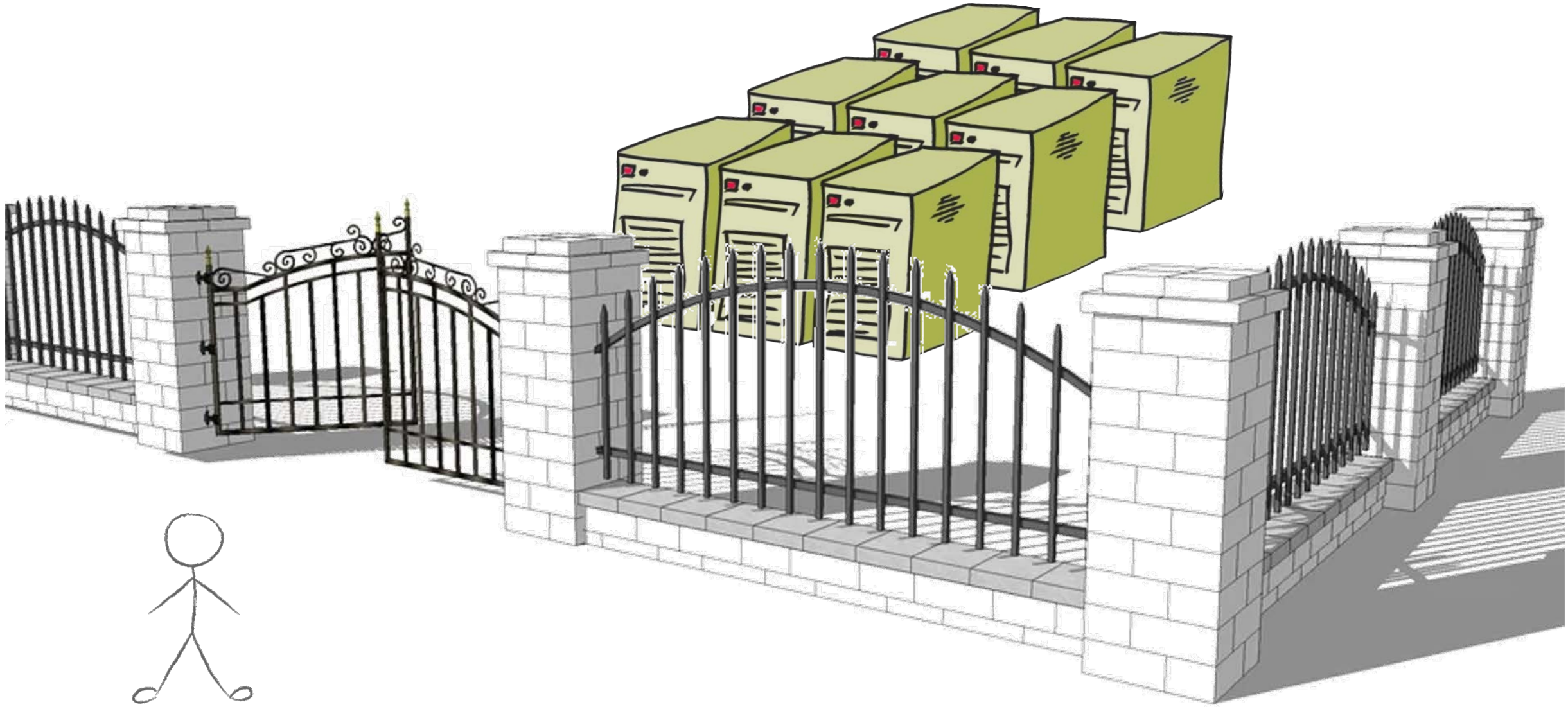
Science Gateways and the SGX3 Center of Excellence

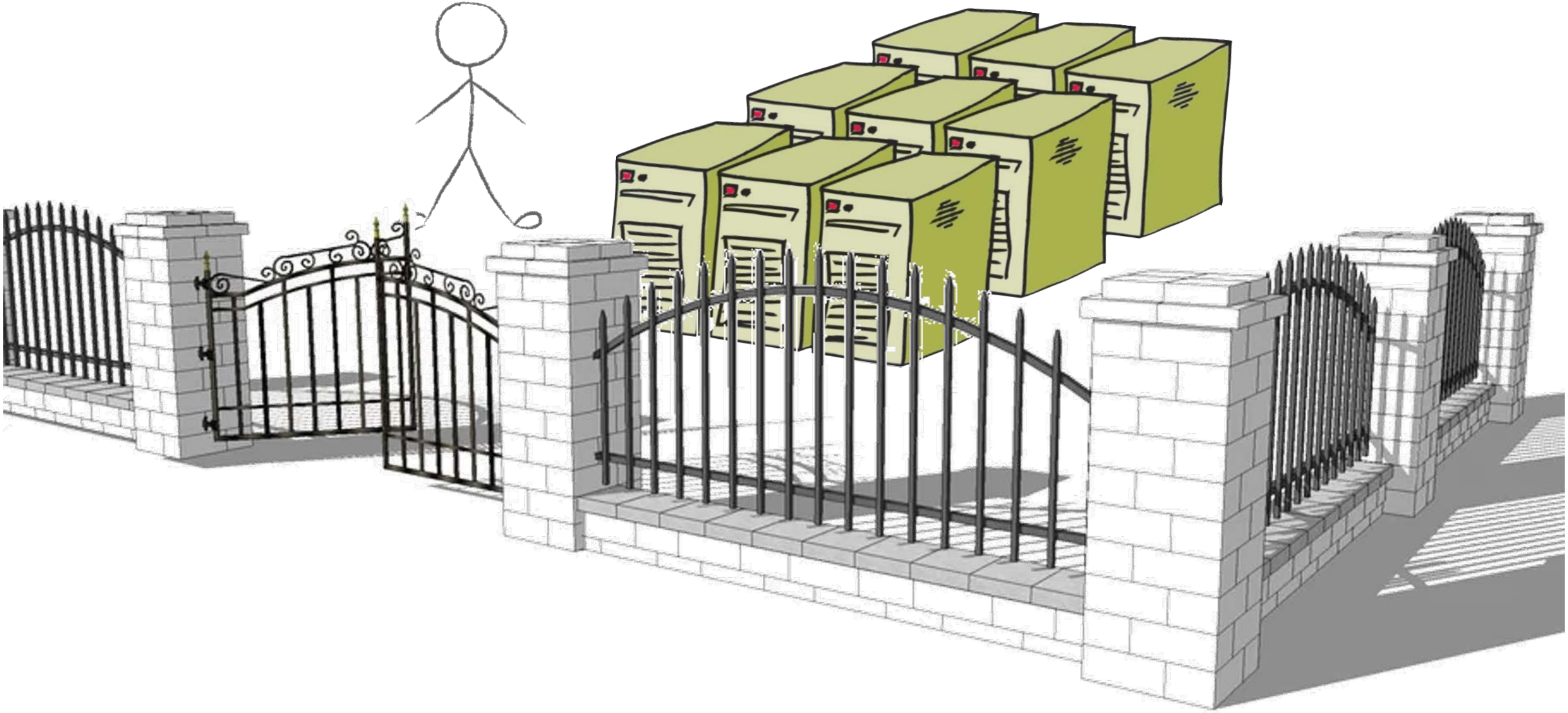
Michael Zentner
Division Director, Sustainable Scientific Software
Director, SGX3 Center of Excellence for Science Gateways
San Diego Supercomputer Center
University of California, San Diego

NSF awards
1547611
2231406

SGX3 SGCI







Science Gateways…

…are about web-based platforms for scientific connections.

https://blogs.lse.ac.uk/impactofsocialsciences/2019/11/05/the-art-of-connection-to-deliver-a-good-research-seminar-you-need-to-connect-with-an-audience-at-a-pragmatic-intellectual-and-emotional-level/

Scientific Software to Supercomputers…

…to massive audiences of researchers and students

…to expensive instruments

document.getElementById(div).
else if (i==2)
{
var atpos=inputs[i].indexOf("@");
var dotpos=inputs[i].lastIndexOf(".");
if (atpos<1 || dotpos<atpos+2
document.getElementById('errEmail').
else
document.getElementById(div).

0 10 1 0
0 10 1 0
0 10 1 0
0 10 1 0
0 10 1 0
0 10
0

…to data

...to each other

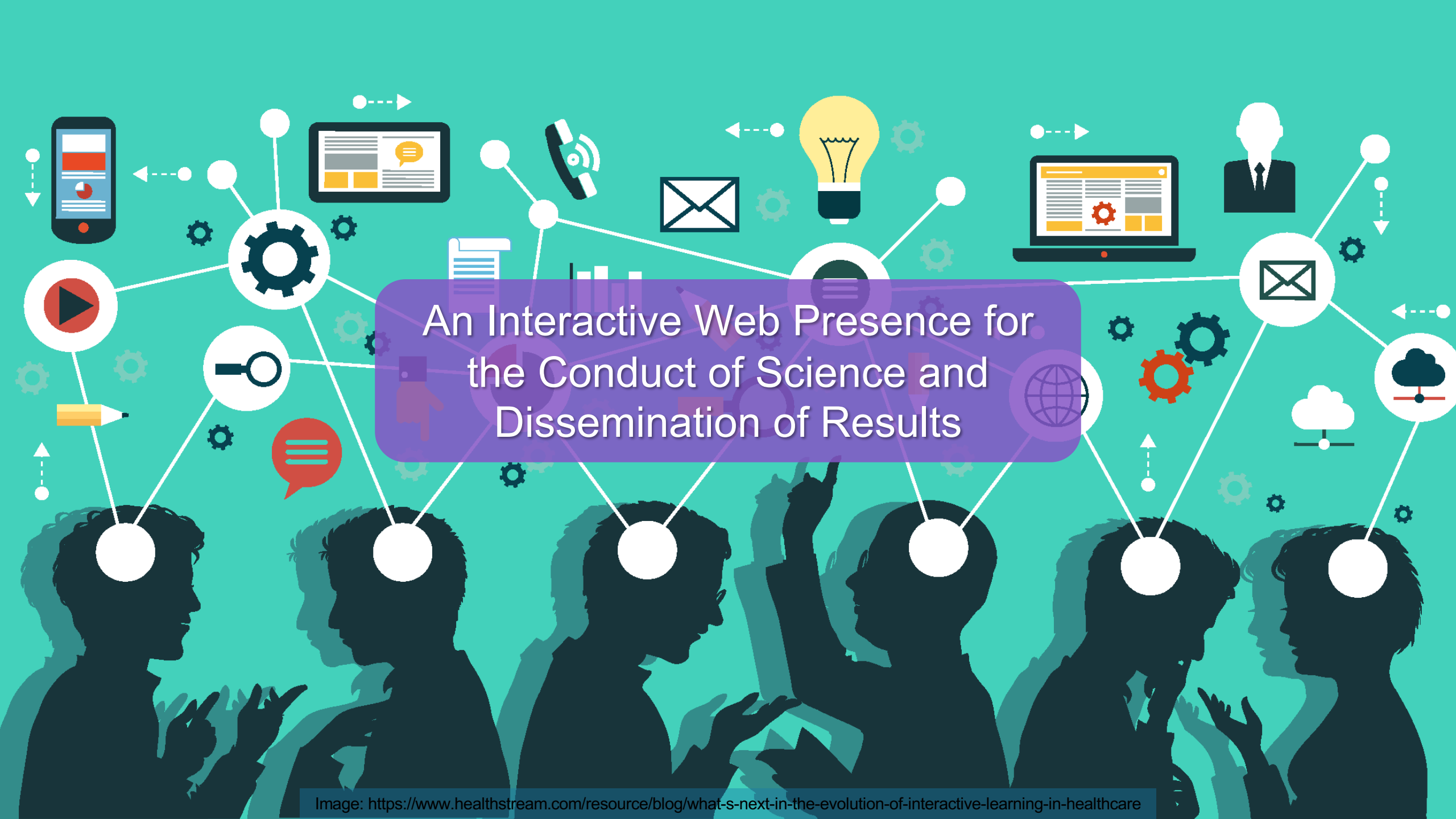
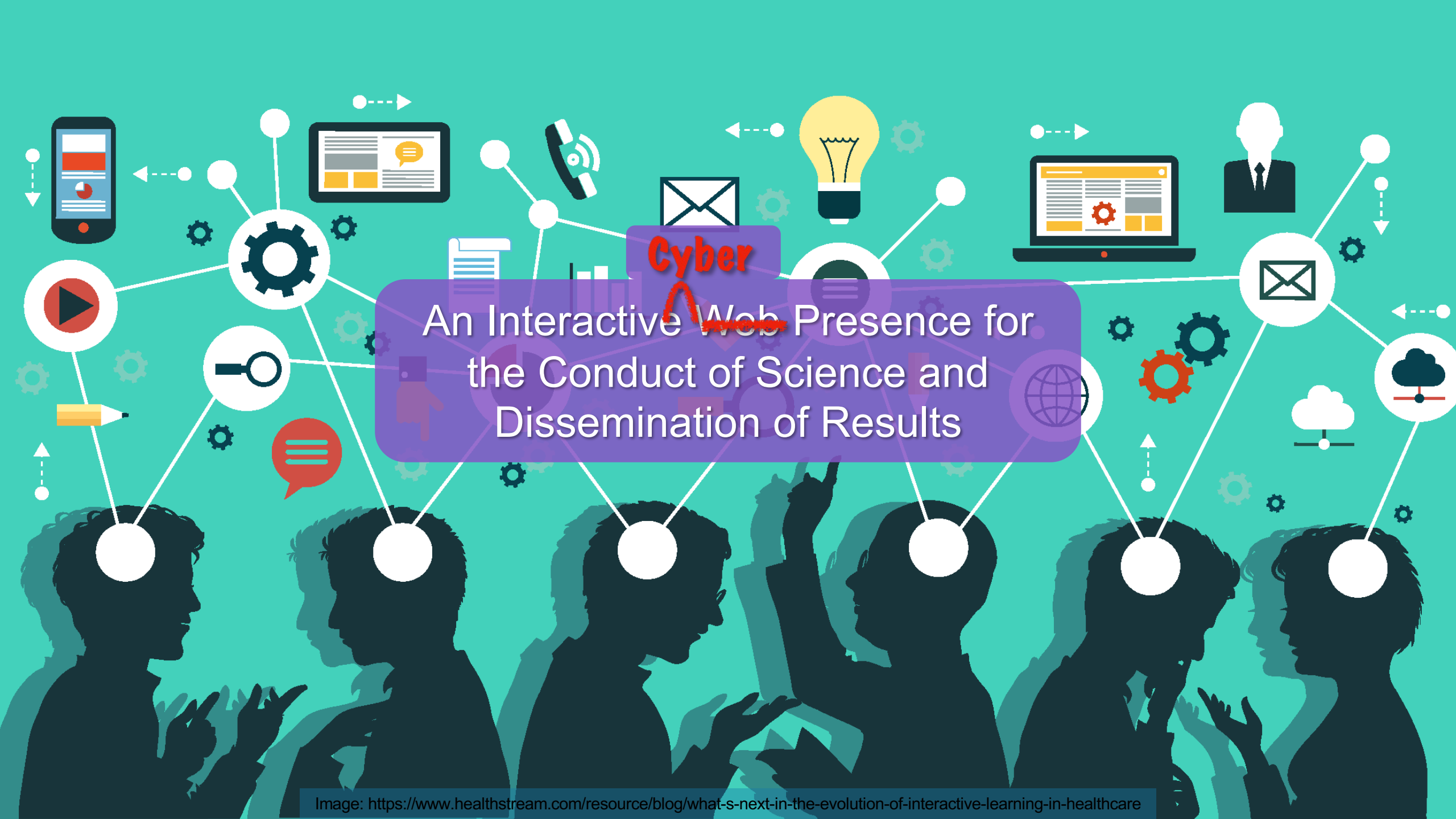


Image: https://www.healthstream.com/resource/blog/what-s-next-in-the-evolution-of-interactive-learning-in-healthcare



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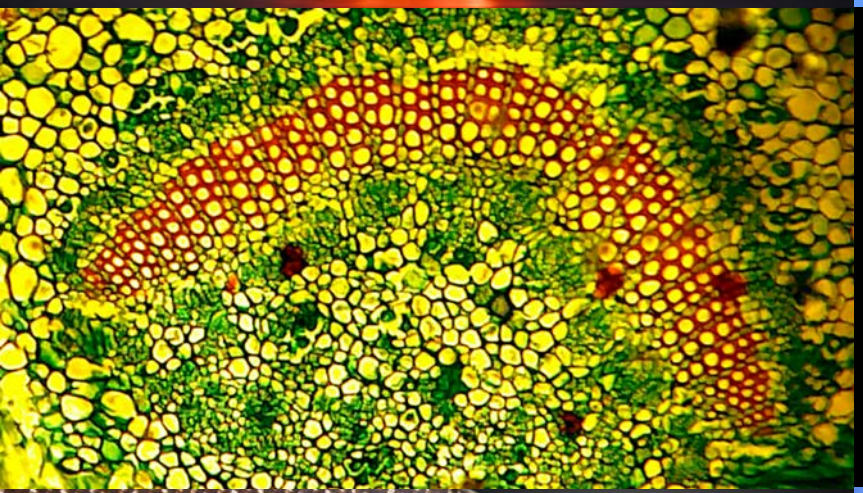
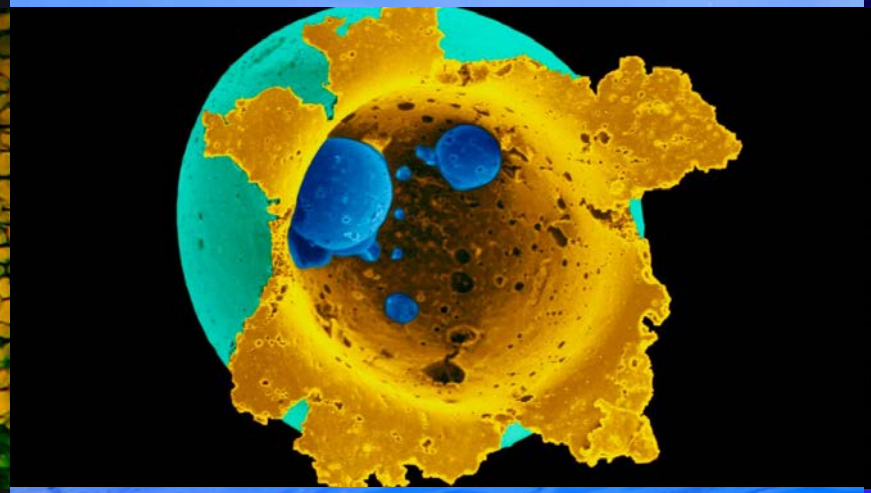
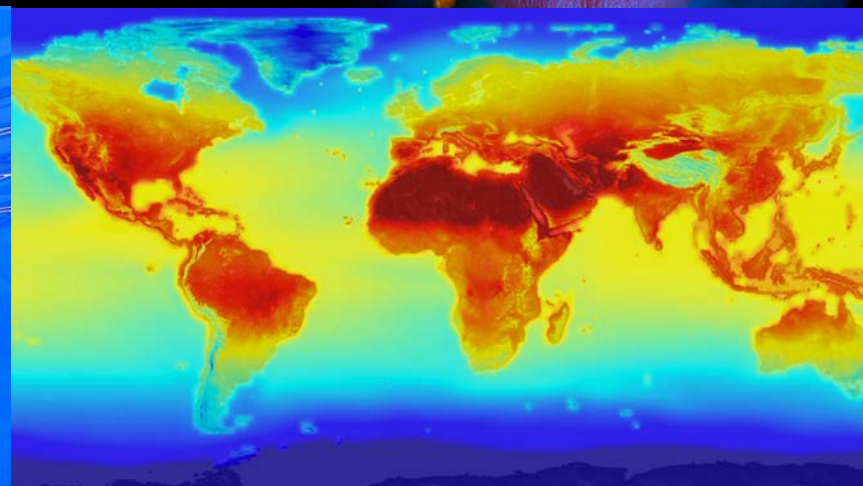
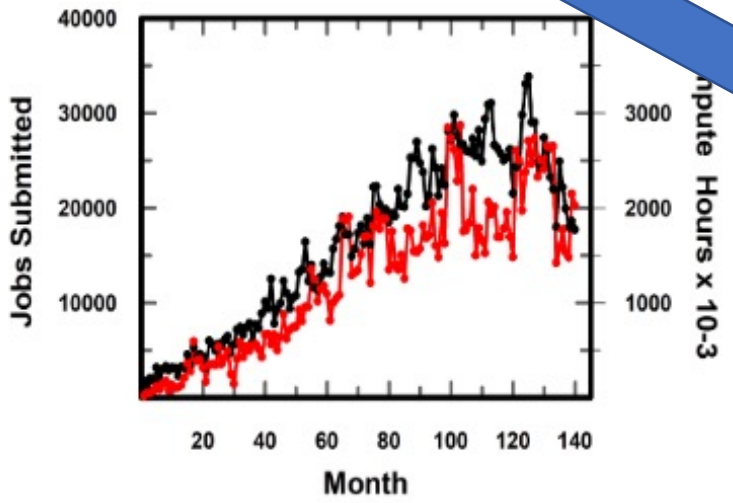





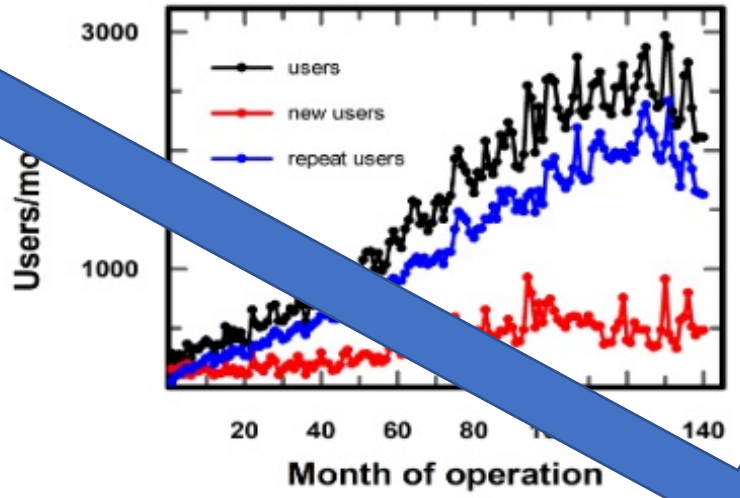
It Matters: Scholarly Impact

CIPRES Science Gateway Usage Statistics 12/1/2009 - 9/30/2021

- 2.29 million TeraGrid/XSEDE jobs submitted by 52,026 unique users.
- Average of 549 new XSEDE users registered in each of the last 12 months.
- 166 million core hours of TeraGrid/XSEDE time distributed to scientists.
- Used for curriculum delivery by at least 114 instructors.
- Supported at least 9,700 publications.

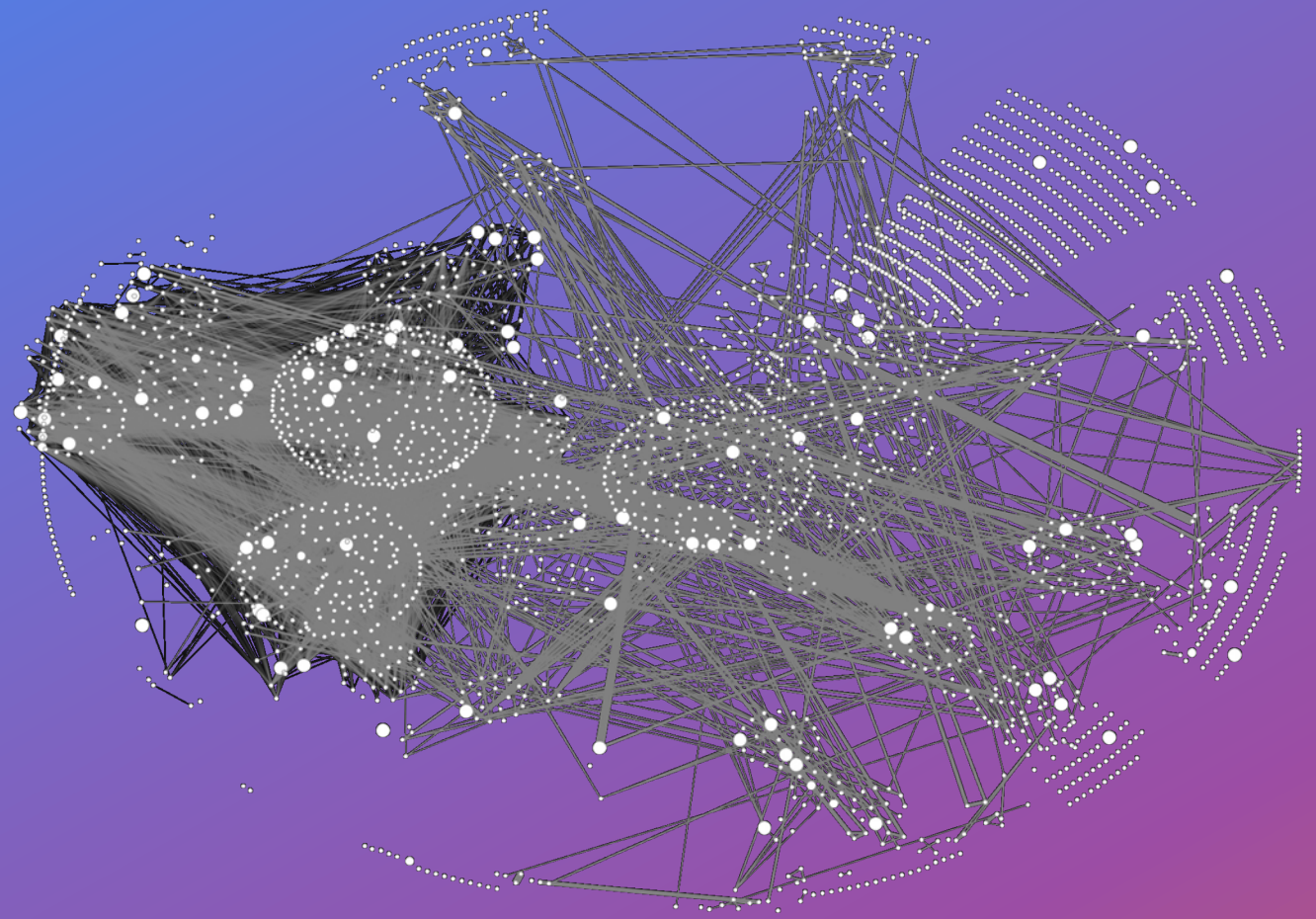


Jobs: Black; CPU HRS, Red.



- **Supported at least 9,700 publications.**

It Matters: Collaboration Impact

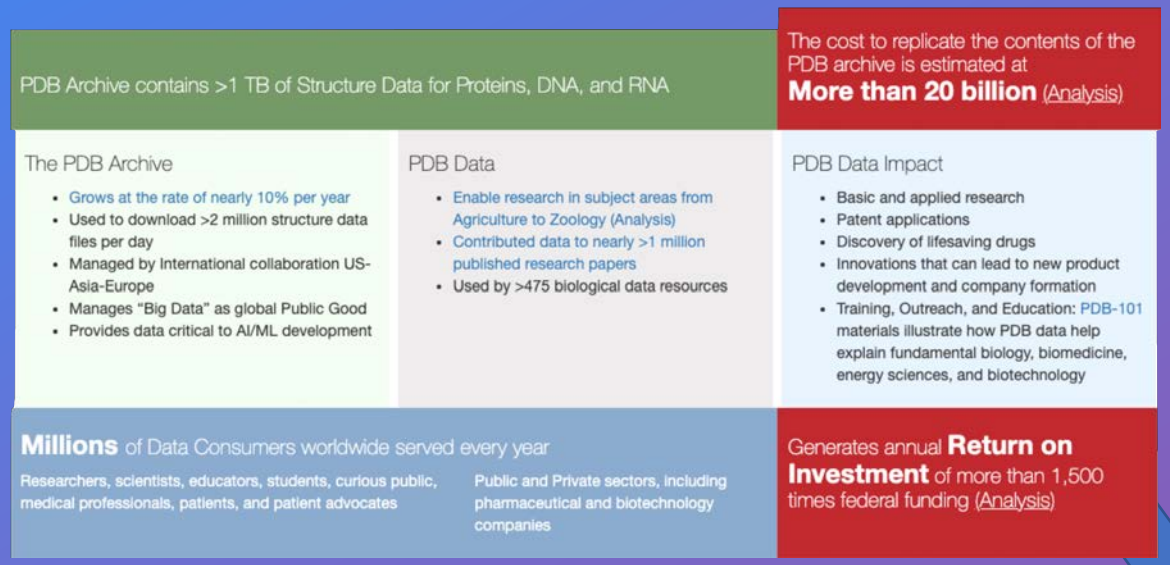


2,724 vetted citations

68,310 secondary citations

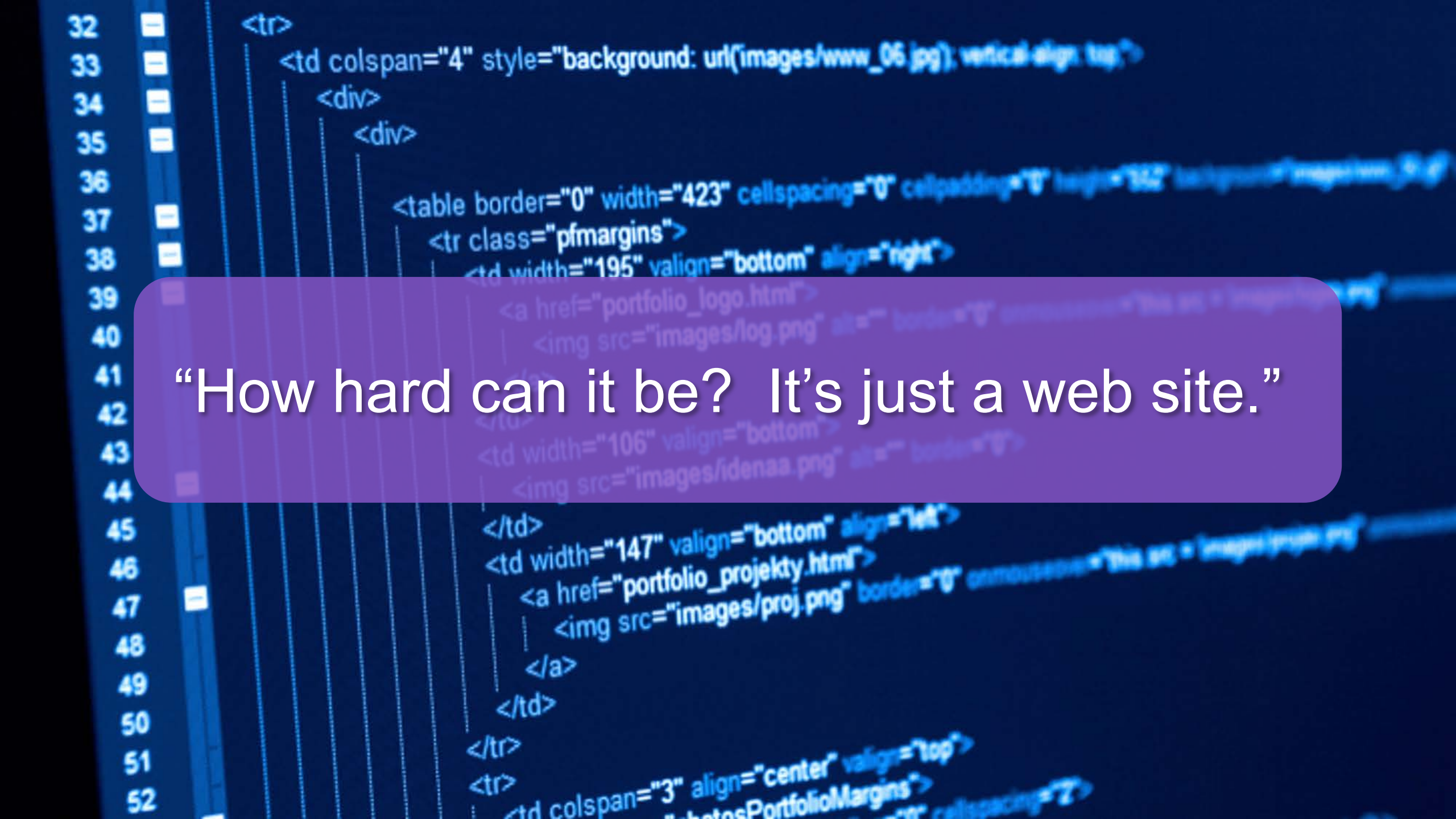
SGX3 | SGCI

It Matters: Financial Impact



The cost to replicate the contents of the PDB archive is estimated at **More than 20 billion** (Analysis)

Generates annual **Return on Investment** of more than 1,500 times federal funding (Analysis)

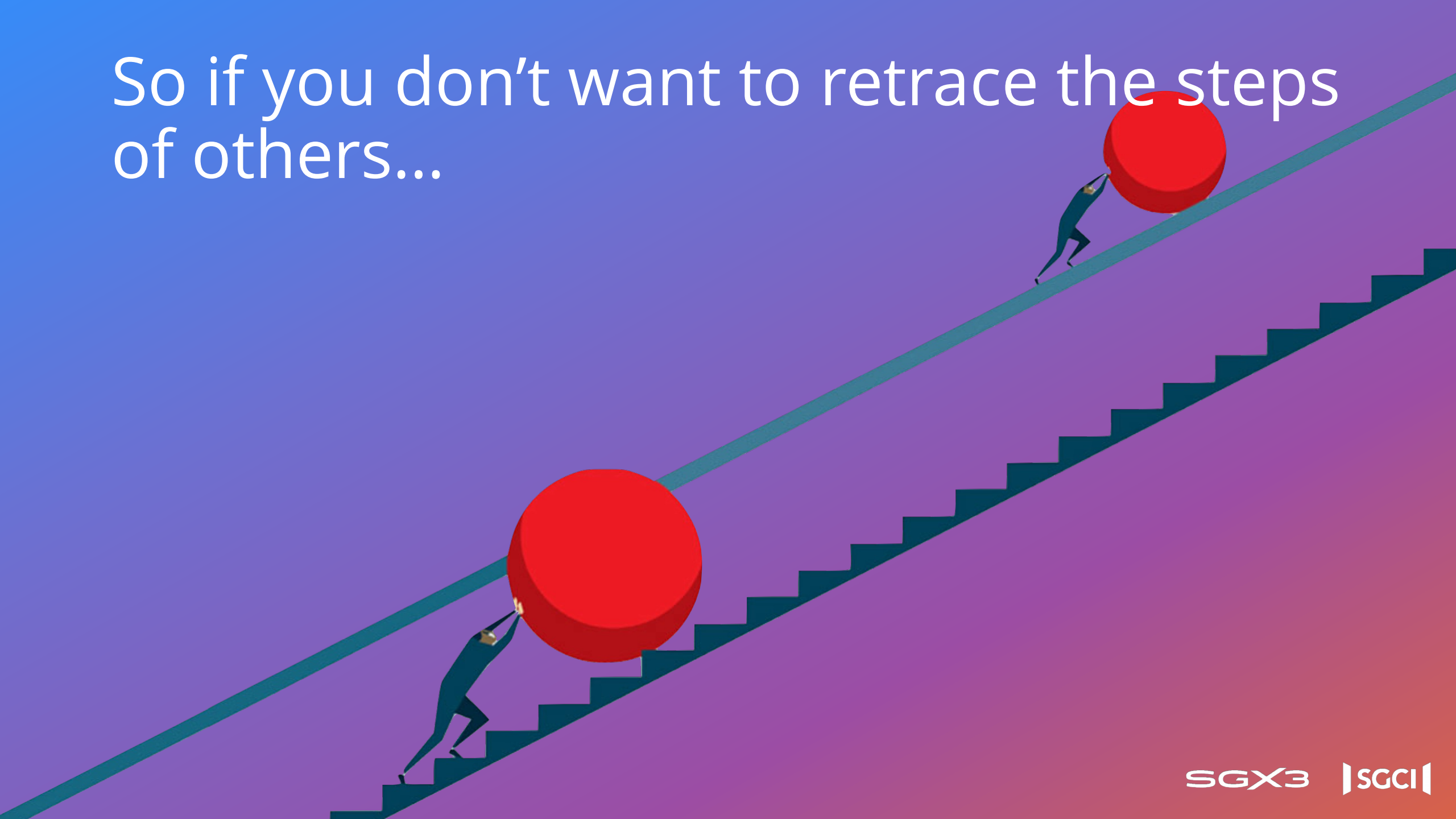

"How hard can it be? It's just a web site."

Day 1

Day T-1

SGX3 | SGCI

So if you don’t want to retrace the steps of others…



SGX3

SGCI

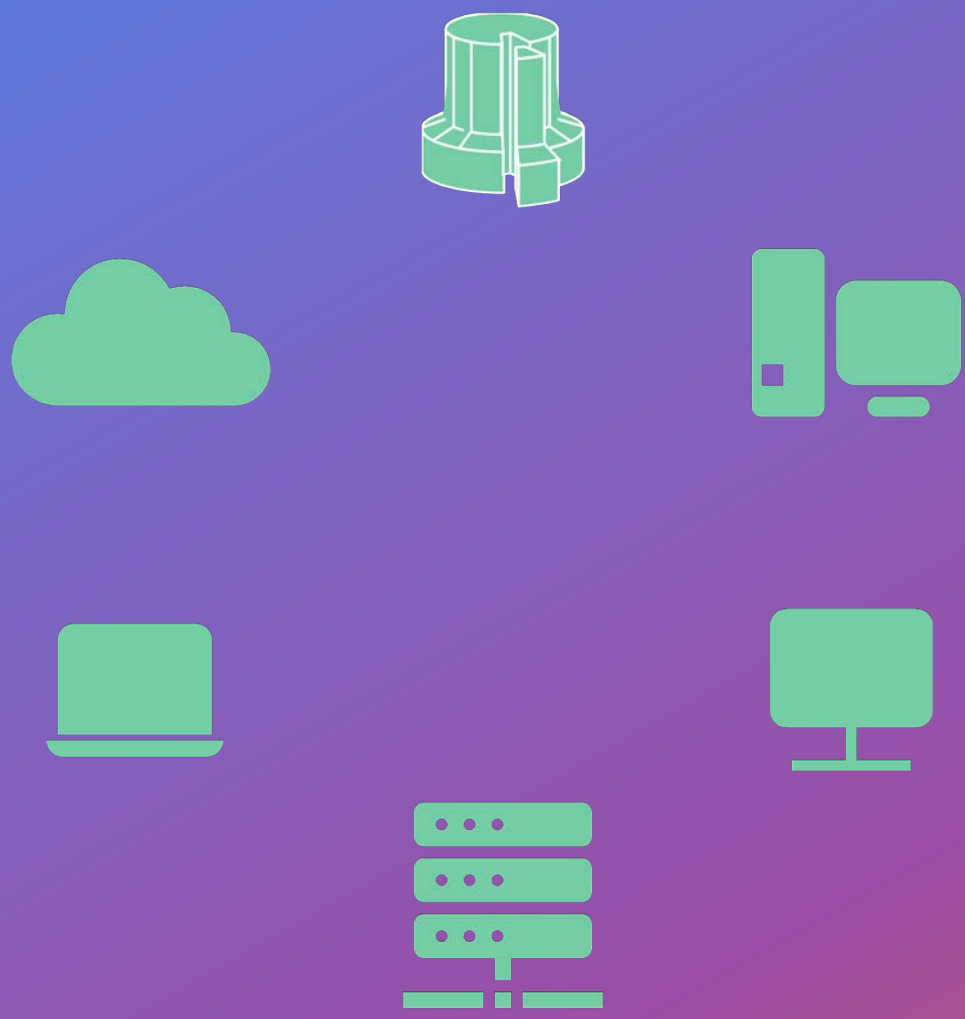
A Center of Excellence and a Software Institute to Serve the Science Gateways Community.

- ✓ Community building activities
- ✓ Workforce development activities
- ✓ Light-touch consulting / advisory services
- ✓ Usability / user experience design and analysis
- ✓ Focus Week (Austin, April 2024)
- ✓ Conference (Boseman, October 2024)

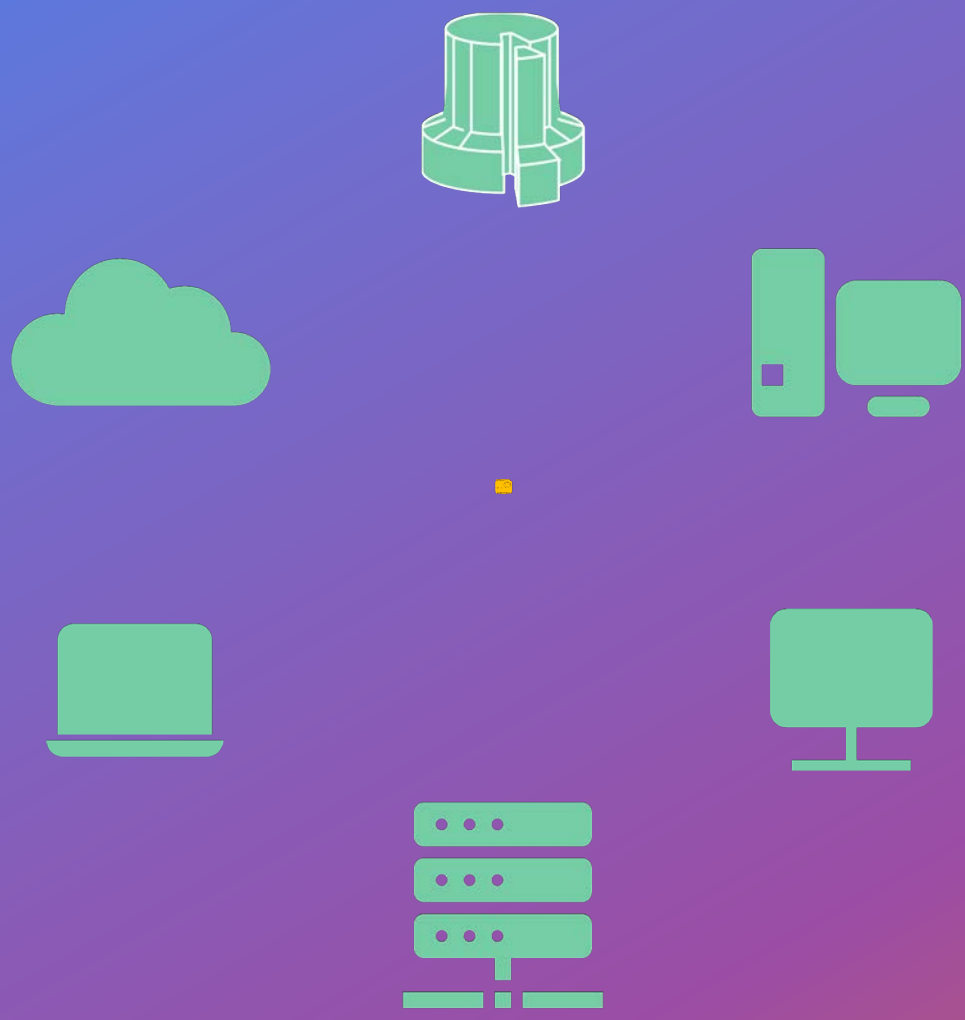
- ✓ In depth consulting
- ✓ Software team augmentation / complete outsourcing
- ✓ Professional science gateway operation
- ✓ Graphic design

SGCI & SGX3 have facilitated some great impact stories and has shown an on average 6.8x acceleration in gateway development.

SGX3 SGCI

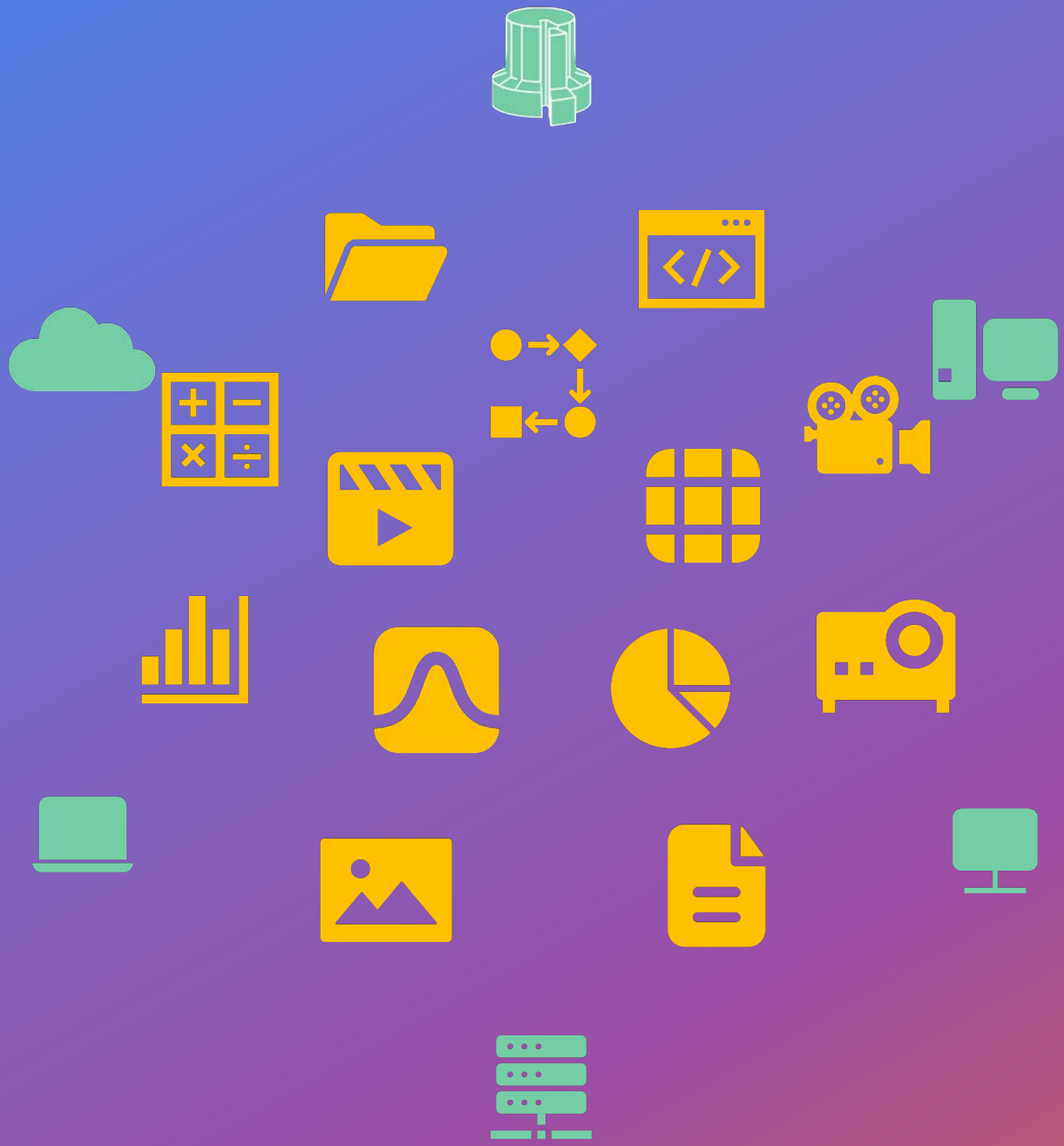


SGX3 | SGCI

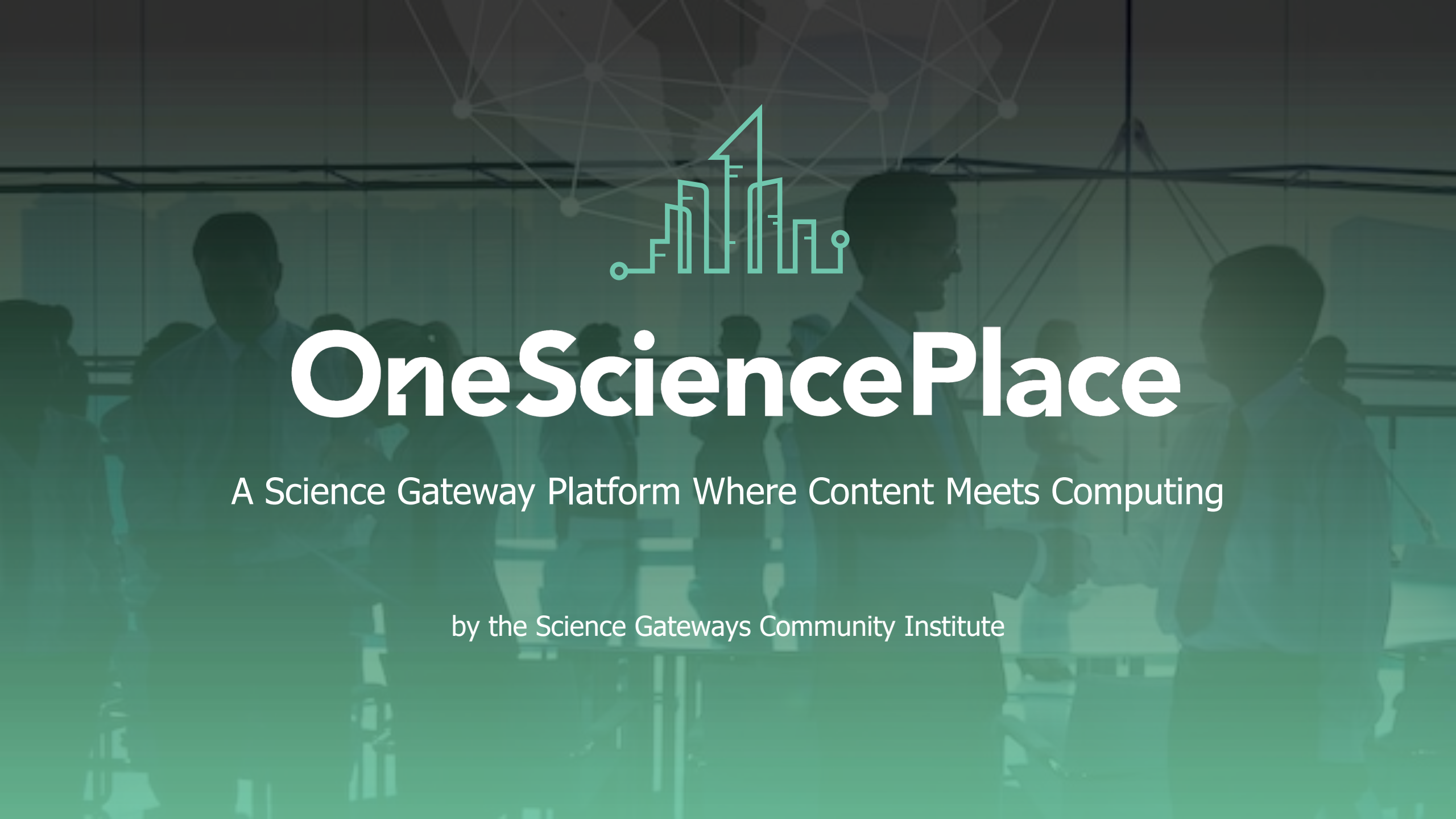


SGX3 | SGCI

SGX3 | SGCI



SGX3 | SGCI



OneSciencePlace

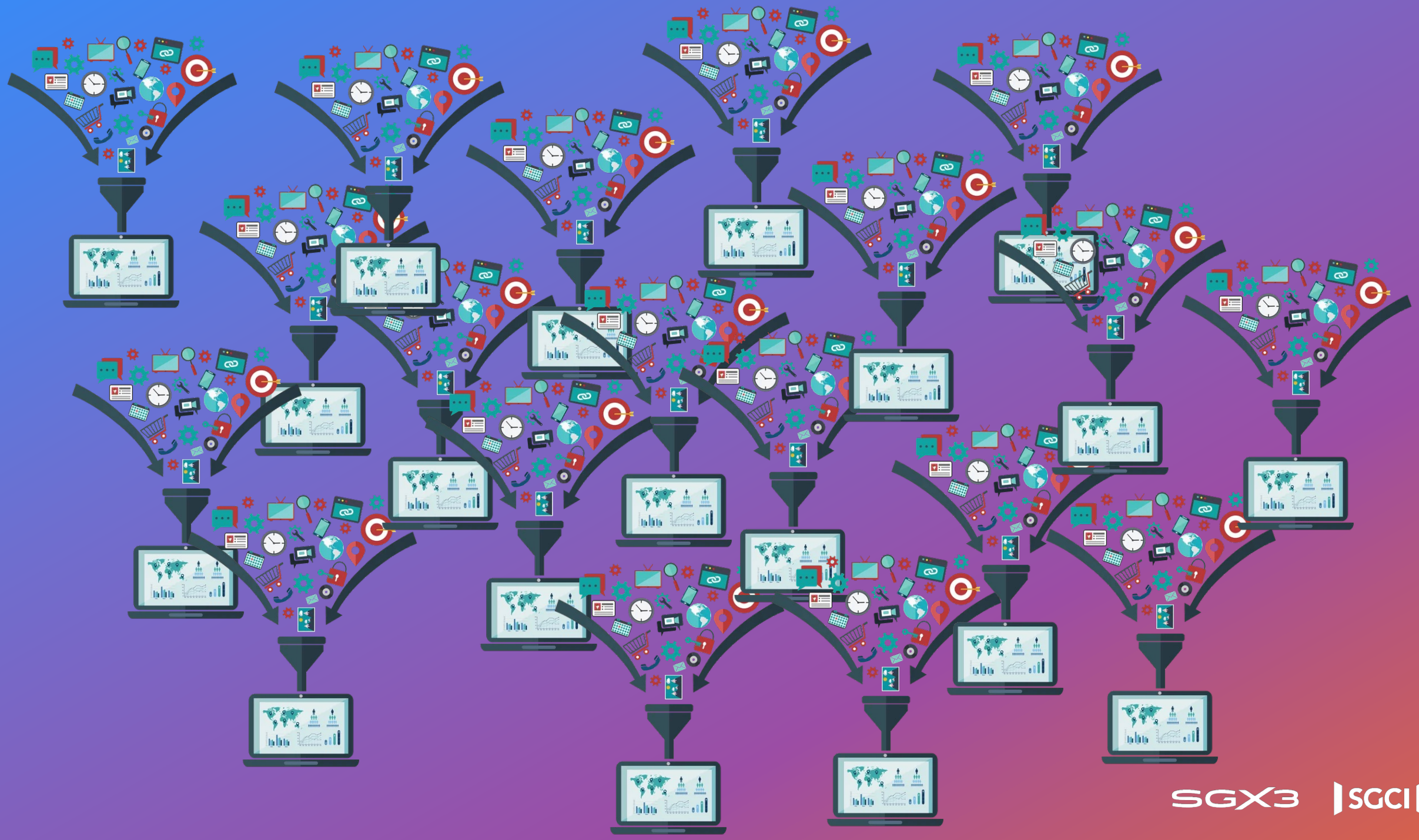
A Science Gateway Platform Where Content Meets Computing

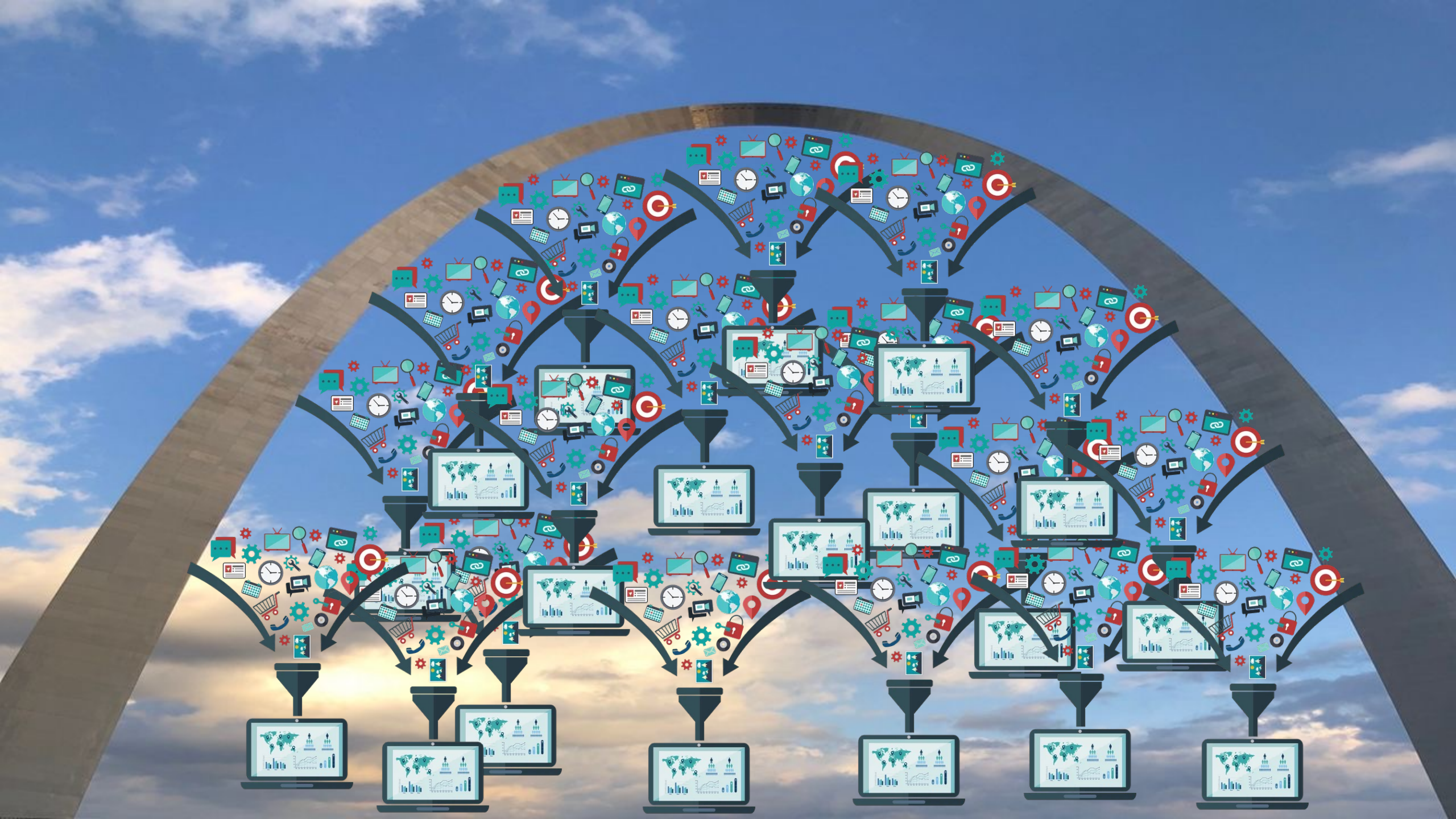
by the Science Gateways Community Institute

https://blogs.lse.ac.uk/impactofsocialsciences/2019/11/05/the-art-of-connection-to-deliver-a-good-research-seminar-you-need-to-connect-with-an-audience-at-a-pragmatic-intellectual-and-emotional-level/

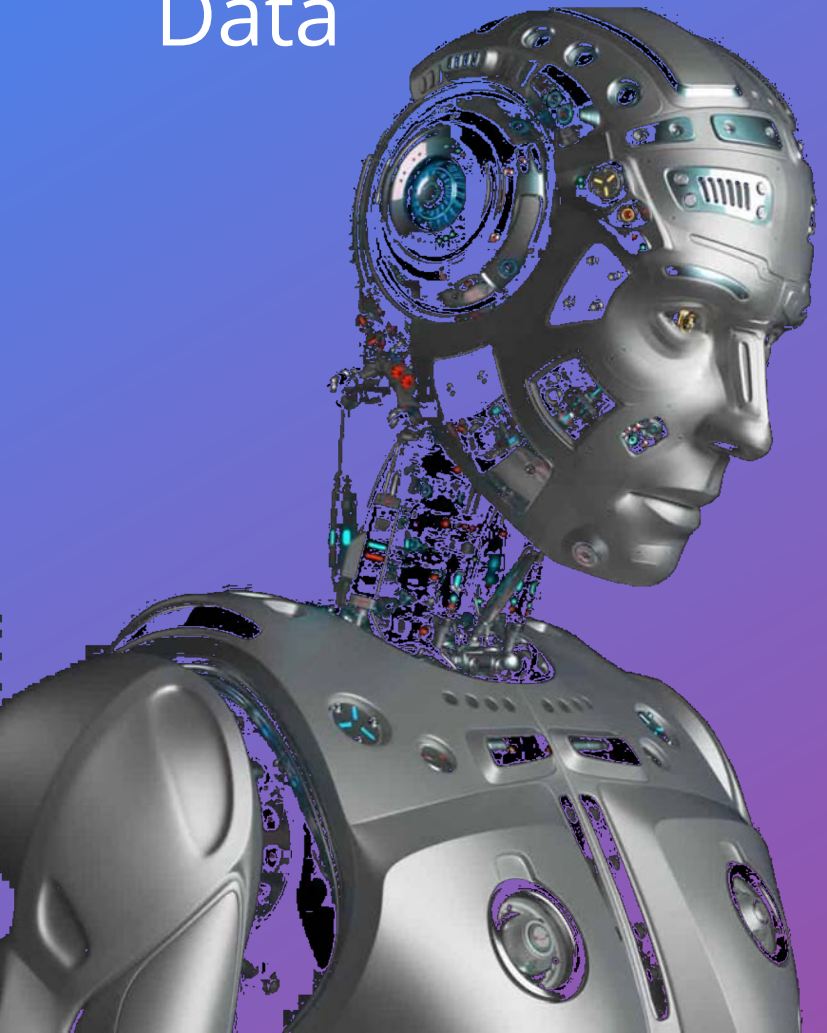
https://www.weforum.org/agenda/2023/03/nairr-ai-research-hub-teach-world-next-generation-innovation/

SGX3 | SGCI


SGX3
SGCI



AI-Based Automation Possibilities with Science Gateway Data



FAIR	Automatically make computations and data processing results FAIR
Move	Move computing to data with automatically produced surrogate models
Interact	Facilitate fast interactions with data and models for rapid comprehension
Intervene	Intervene in user conduct using AI based analytics

SGX3 | SGCI

OneSciencePlace

SGX3 SGCI

help@sciencegateways.org

www.ScienceGateways.org