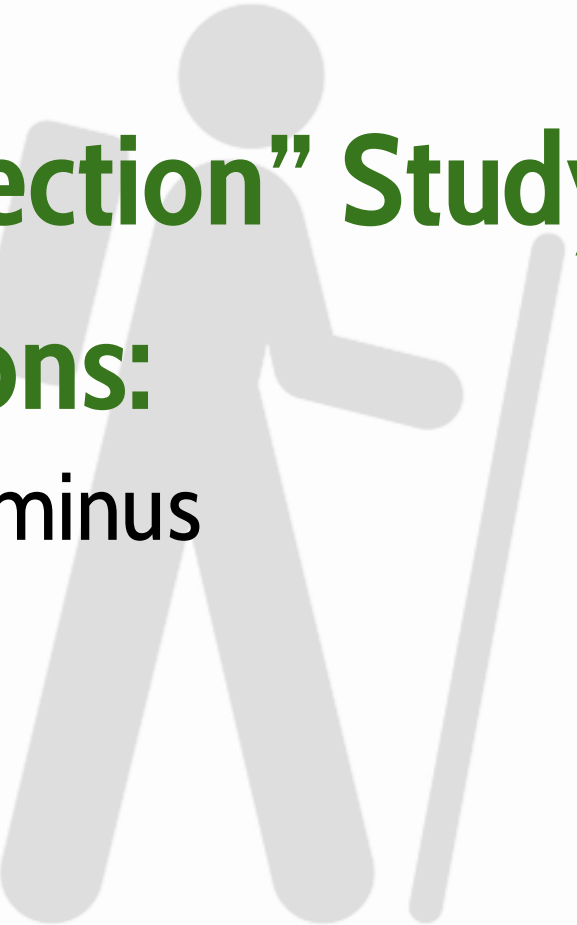
Designing a "Point of Selection" Study Using Simulations:

From Trailhead to Terminus



INSTITUTE of Museum and Library SERVICES

LG-81-15-0155

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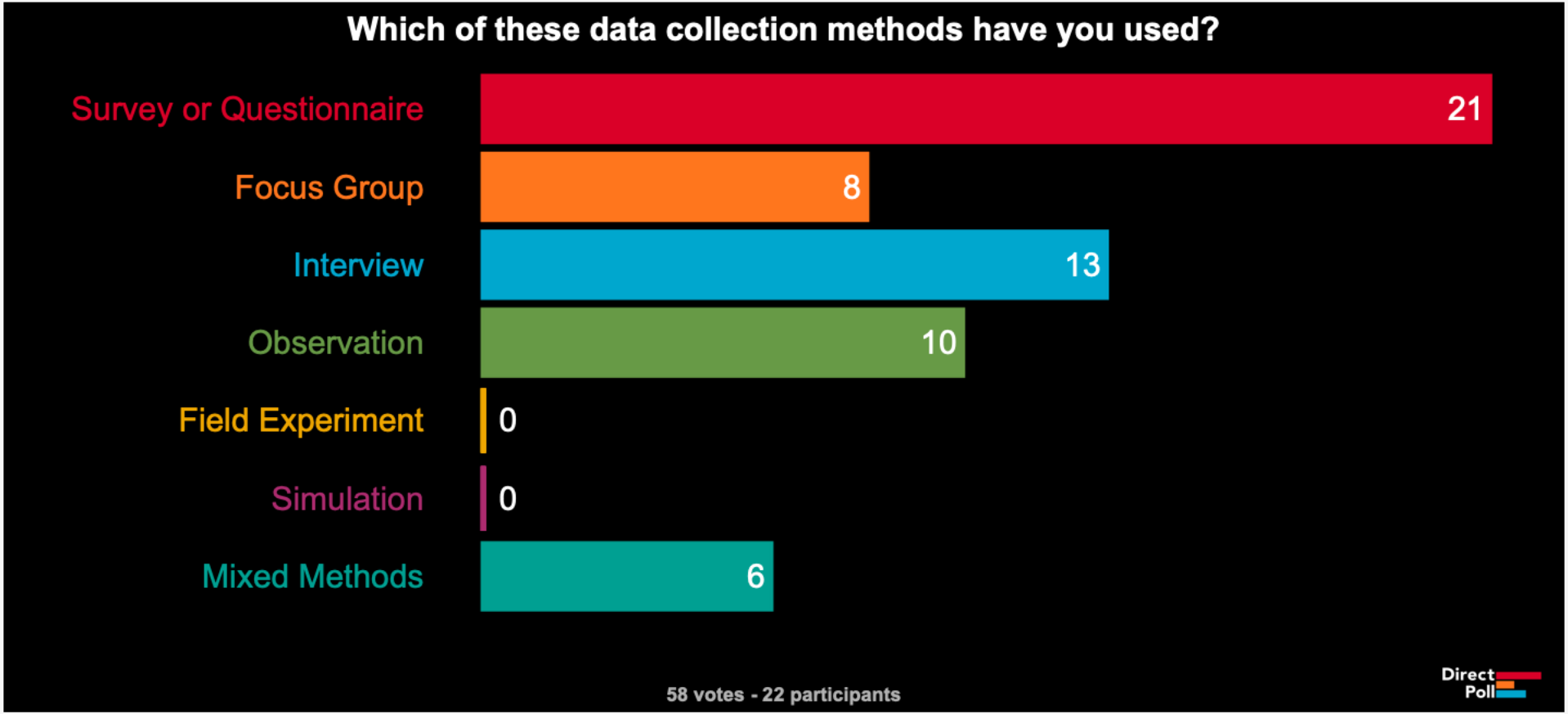
http://etc.ch/HHyd



presenters:

- Amy Buhler (*University of Florida – University Librarian*) abuhler@ufl.edu
- Joyce Kasman Valenza, PhD (*Rutgers University – Assistant Teaching Professor*) joycevalenza@gmail.com @joycevalenza
- Brittany Brannon (*OCLC Research – Research Support Specialist*) brannonb@oclc.org

our early trekkers

important links:

RSIC LibGuide: https://guides.uflib.ufl.edu/RSIC

Resource Hyperdoc: http://tinyurl.com/rsictrailhead

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introduction: basecamp

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overview

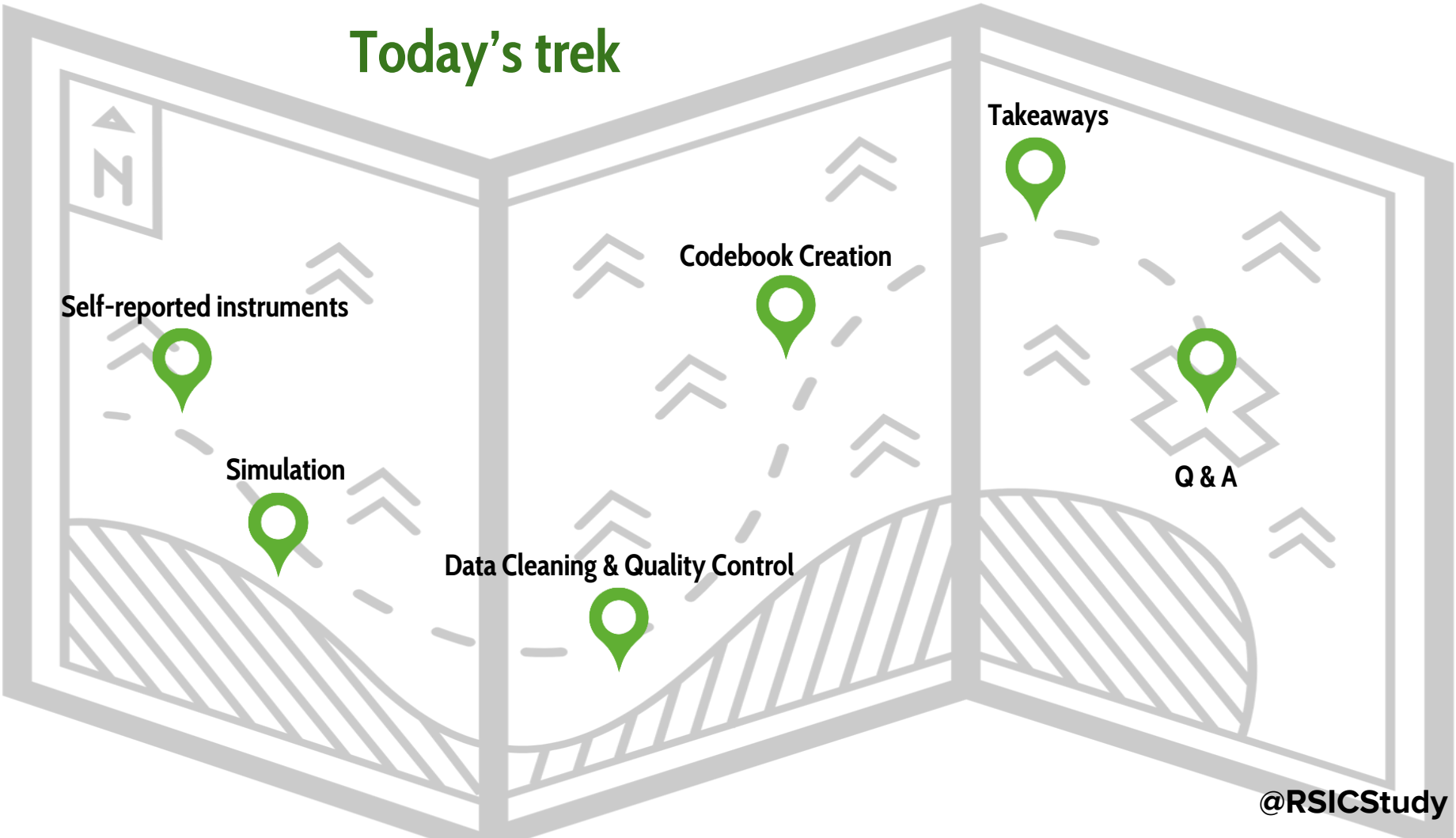
Our study examines students' **"point of selection" behavior** (i.e. the point at which an information seeker determines a resource meets their information need) and their judgements associated with the **helpfulness, citability, and credibility** of various online information resources. It also assessed students' ability to identify the **container** (i.e. document type) in which the information is housed.

research questions

1. How do **STEM students** determine the **credibility** of online information resources?
    - What cues from a web search results screen do students use to judge the credibility of online information resources?
    - How do students' characteristics influence their credibility judgments of online information resources?

2. Do **STEM students** differentiate among **different types of online information resources** during point of selection?
    - What cues from a web search results screen do students use to identify online information resources?
    - How do students' characteristics and experiences influence their identification behavior?

Today's trek



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what was in our research pack?

Prescreen Survey

Interview Questions

Simulation of SERPs (not to be confused with sherpas!)

Think-Aloud Protocols

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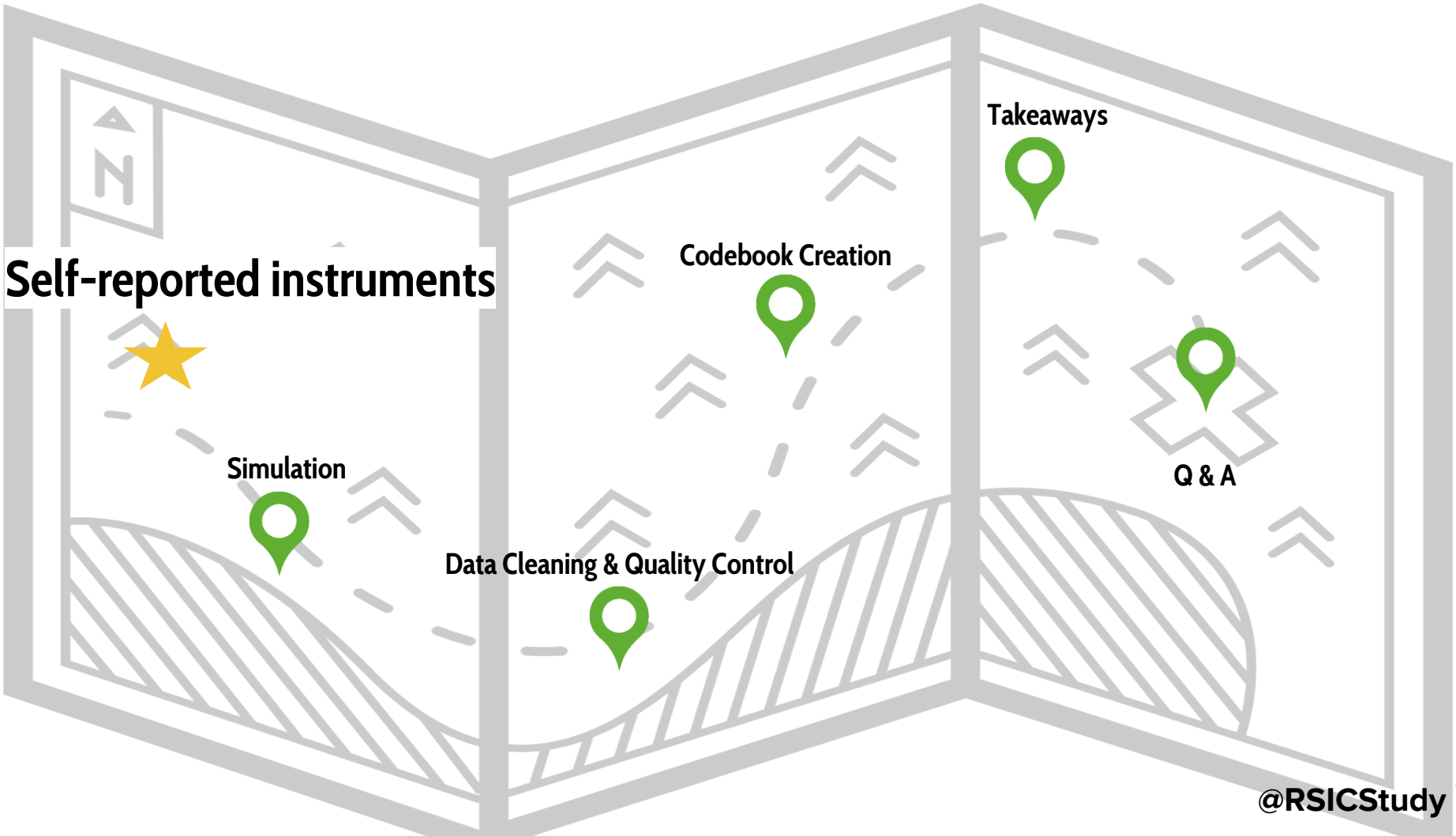
Takeaways
Self-reported instruments
Codebook Creation
Simulation
Q & A
Data Cleaning & Quality Control
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prescreen survey

- Demographics
- Internet access and use
- Librarian help in the last two years
- Participation in follow-up study

our cohorts

29 Grades 4-5

30 Grades 6-8

26 Grades 9-12

30 Community College Students

30 Undergraduate Students

30 Graduate Students

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interview questions

Pre-Simulation

- Librarian/library interaction
- # of research projects in the last two years
- Their last research project
- Device use
- Social media use for school

Post-Simulation

- Confidence
- Care
- Container

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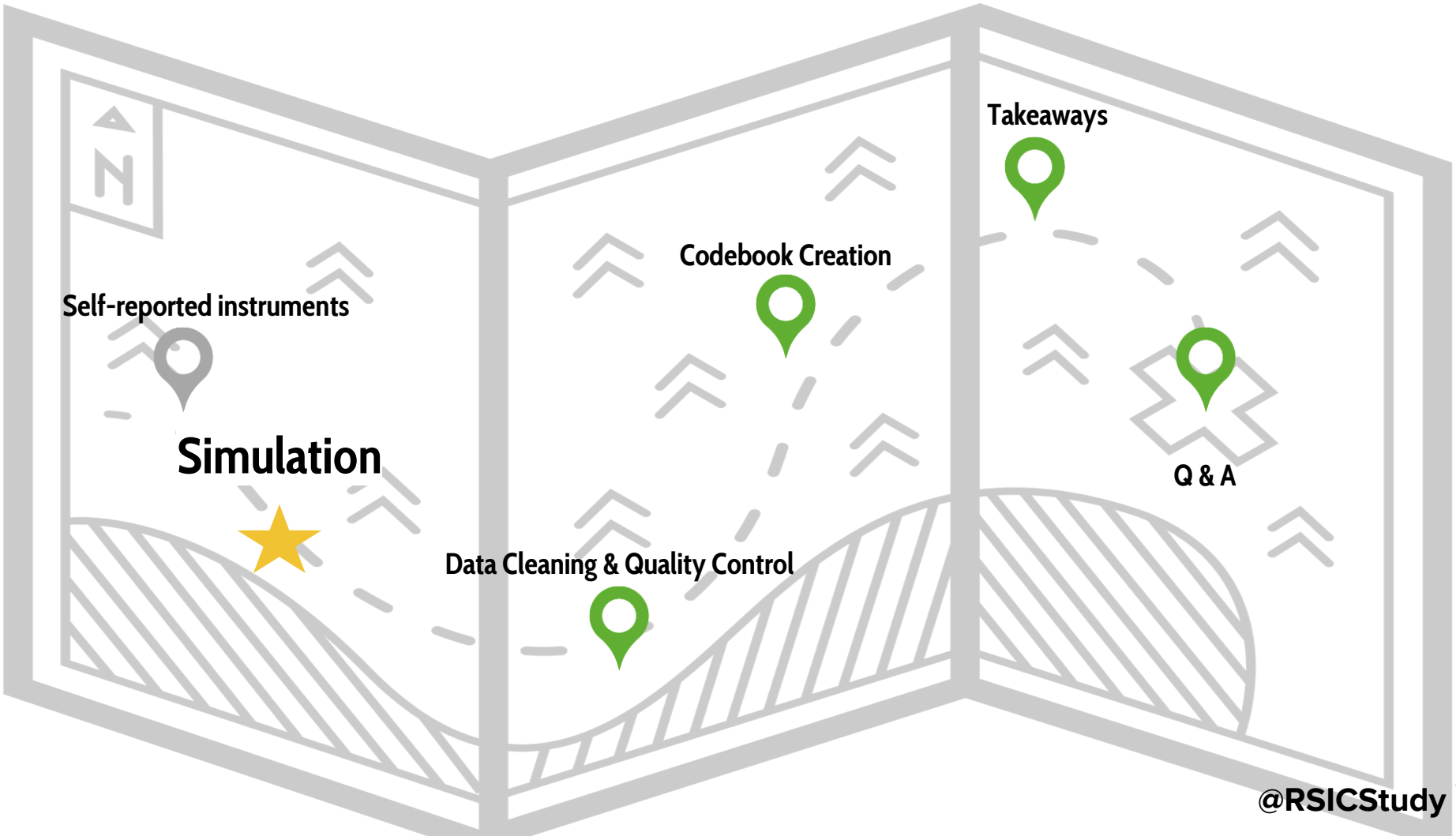
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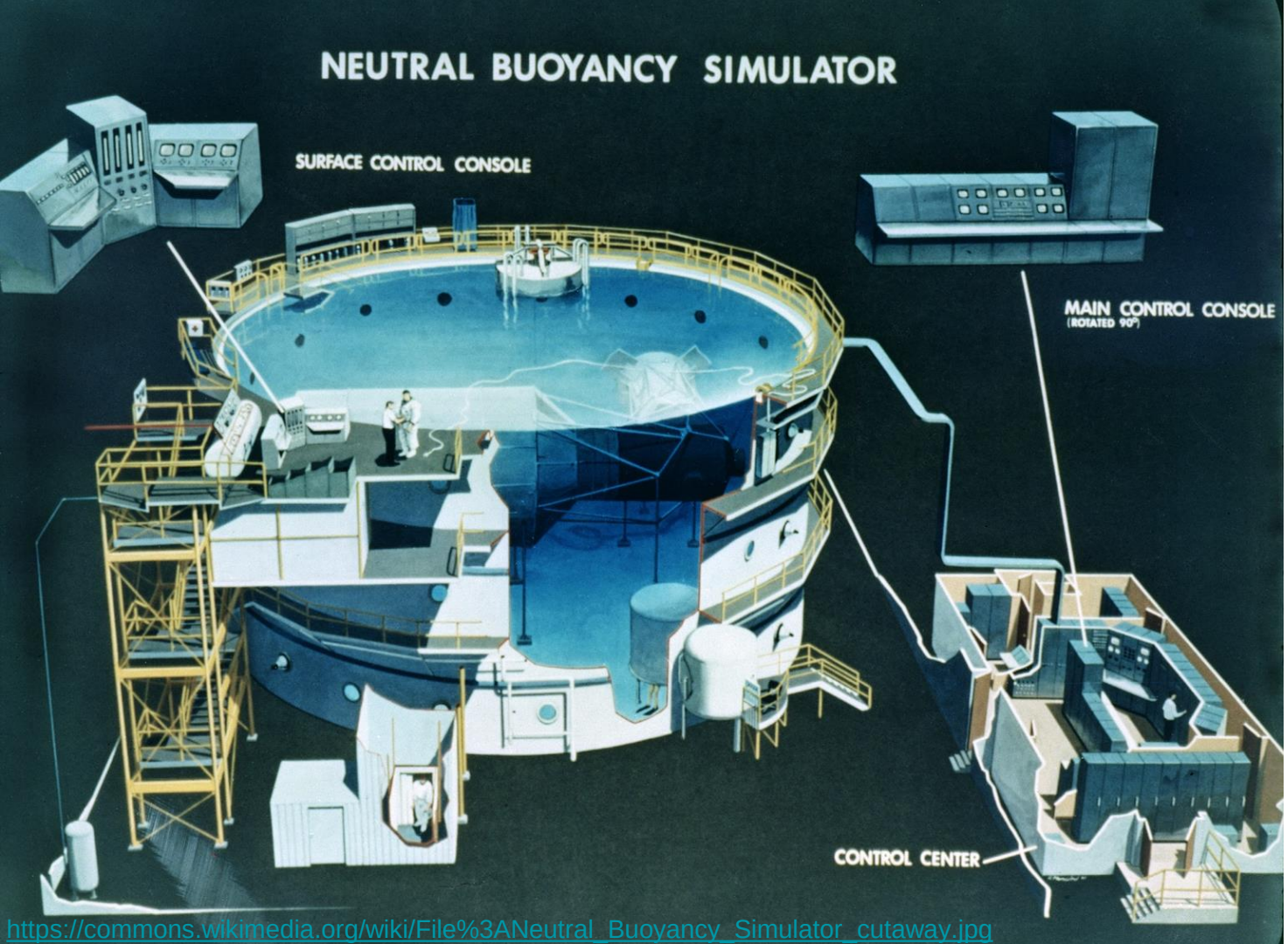
What's a simulation?

https://commons.wikimedia.org/wiki/File:Rollover_simulator_J1.jpg



https://commons.wikimedia.org/wiki/File%3ANeutral_Buoyancy_Simulator_cutaway.jpg

Why a simulation?

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Google
the droids we're looking for
Google Search
I'm Feeling
Advertising Programs - Business Solutions
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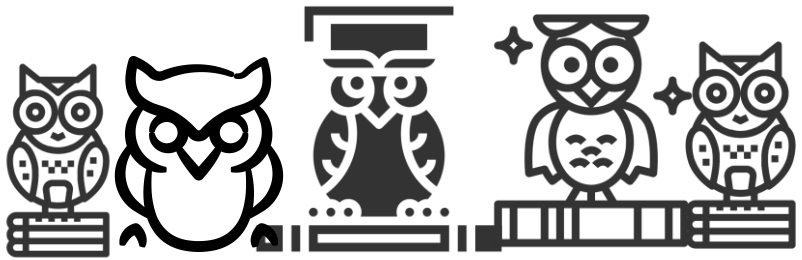
Partnerships: advisory panel

Representation:

- Public Librarian
- School Librarian
- Academic (Community College)
- Librarian Grade 4-5
- Instructor Grade 6-8
- Instructor Grade 9-12
- College Instructor
- University Instructor



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advisory panel activities: research prompts and resource lists

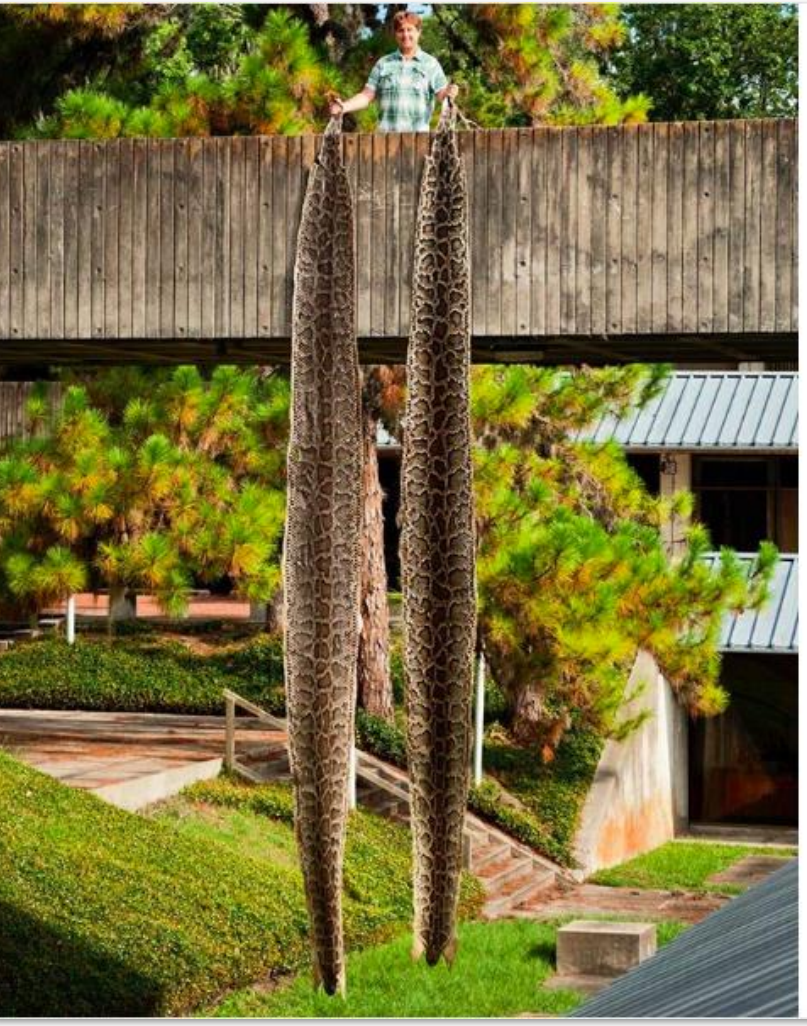
One initial face-to-face meeting at UF

Formation of six small teams based on the cohorts of students used in study.

Several Google Hangouts working group meetings

Led by a member of the research team, small teams met virtually to:

- Establish a grade-level, standards-aligned research prompt for the simulation
- Determine appropriate number of resources to present to present in simulated results lists and number of resources participants would be asked to select from the results (cognitive load)
- Curate a list of appropriate resources for potential inclusion in each simulation for their educational levels



floridamuseum • Follow
Florida Museum of Natural History

floridamuseum This week we are looking at invasive species in #florida for #nisaw Herpetologist Kenny Krysko displays the tanned skins of two Burmese pythons captured in Everglades National Park and necropsied at the Florida Museum. Krysko is standing on the walkway between Dickinson Hall and Bertram Hall @uflorida.
The larger snake measured 17 feet 7 inches and contained 87 eggs, both state records in 2012, when the snakes were collected, while the smaller snake measured 16 feet 6 inches.
According to @usgs tens of thousands of invasive Burmese pythons are estimated to be present in the Everglades.
#floridamuseum #invasivespecies #burmesepython #herpetology #snakes @evergladesnps

bananalumin @hint77

367 likes

FEBRUARY 25

Log in to like or comment.

why a python?

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why a python?

CHECKLIST

- ✓ single, controversial science topic
- ✓ regional interest
- ✓ understood by local participants
- ✓ realistically studied
- ✓ serious gore appeal!

resource selection

Methodic review of 483 potential resources to establish the 65 unique resources that would be used in the simulations.

Small teams searched for & identified potential resources targeting assigned cohort (graduate, undergraduate, community college, Grade 9-12,Grade 6-8, or Grade 4-5).

Google Drive Sheets to curate, access and review suggested titles. Moved to a single spreadsheet because of overlap

Resources reviewed by teams following dimensions of credibility:

- Currency/Timeliness
- Authority
- Objectivity
- Accuracy
- Good coverage
- Relevance.

Final sources selected based on teams' 1-3 rankings

research prompts

Elementary

Research Prompt:

You have an assignment to write a science report that investigates the Burmese Python in the Everglades and describes the ways that this animal is affecting the Everglades habitat.

Middle School

Research Prompt:

You are assigned a report on the following: Citing specific evidence, in what ways has the invasion of the Burmese Python impacting the health of the Florida Everglades' ecosystem?

High School

Research Prompt:

You are asked to create a public service message based on solid evidence, addressing the following: How are pythons impacting the biodiversity of the Everglades ecosystem?

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research prompts

Community College

Research Prompt:

You are beginning a literature search for your General Biology (BSC2005) final paper. You've decided to focus on the impact of the Burmese python (*Python molurus bivittatus*) to the biodiversity of the Florida Everglades.

Undergraduate

Research Prompt:

You are beginning a literature search for your Wildlife Issues final paper. You've decided to focus on the impact of the Burmese python (*Python molurus bivittatus*) to the biodiversity of the Florida Everglades.

Graduate

Research Prompt:

You are beginning a literature search for your Wildlife Issues final paper. You've decided to focus on the impact of the Burmese python (*Python molurus bivittatus*) to the biodiversity of the Florida Everglades.

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NEXT GENERATION SCIENCE STANDARDS
For States, By States

THE STANDARDS ▾ INSTRUCTION AND ASSESSMENT ▾ PLANNING AND COMMUNICATION

MS.Interdependent Relationships in Ecosyste

Students who demonstrate understanding can:

MS-LS2-2. **Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems.** [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.]

MS-LS2-5. **Evaluate competing design solutions for maintaining biodiversity and ecosystem services.*** [Clarification Statement: Examples of ecosystem services could include water purification, nutrient recycling, and prevention of soil erosion. Examples of design solution constraints could include scientific, economic, and social considerations.]

The performance expectations above were developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

Science and Engineering Practices

Constructing Explanations and Designing Solutions
Constructing explanations and designing solutions in 6–8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.
- Construct an explanation that includes qualitative or quantitative relationships between variables that predict phenomena. (MS-LS2-2)

Engaging in Argument from Evidence
Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s).
- Evaluate competing design solutions based on jointly developed and agreed-upon design criteria. (MS-LS2-5)

Disciplinary Core Ideas

LS2.A: Interdependent Relationships in Ecosystems
- Similarly, predatory interactions may reduce the number of organisms or eliminate whole populations of organisms. Mutually beneficial interactions, in contrast, may become so interdependent that each organism requires the other for survival. Although the species involved in these competitive, predatory, and mutually beneficial interactions vary across ecosystems, the patterns of interactions of organisms with their environments, both living and nonliving, are shared. (MS-LS2-2)

LS2.C: Ecosystem Dynamics, Functioning, and Resilience
- Biodiversity describes the variety of species found in Earth's terrestrial and oceanic ecosystems. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. (MS-LS2-5)

LS4.D: Biodiversity and Humans
- Changes in biodiversity can influence humans' resources, such as food, energy, and medicines, as well as ecosystem services that humans rely on—for example, water purification and recycling. *(secondary to MS-LS2-5)*

ETS1.B: Developing Possible Solutions
- There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. *(secondary to MS-LS2-5)*

Crosscutting Concepts

Patterns
- Patterns can be used to identify cause and effect relationships. (MS-LS2-2)

Stability and Change
- Small changes in one part of a system might cause large changes in another part. (MS-LS2-5)

Connections to Engineering, Technology, and Applications of Science

Influence of Science, Engineering, and Technology on Society and the Natural World
- The use of technologies and any limitations on their use are driven by individual or societal needs, desires, and values; by the findings of scientific research; and by differences in such factors as climate, natural resources, and economic conditions. Thus technology use varies from region to region and over time. (MS-LS2-5)

Connections to Nature of Science

Science Addresses Questions About the Natural and Material World
- Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes. (MS-LS2-5)

Connections to other DCIs in this grade-band:

1. **HS-LS2-7 Ecosystems: Interactions, Energy, and Dynamics**
   ... include urbanization, building dams, and dissemination of **invasive species**.] The performance expectation above was ...
2. **HS.Interdependent Relationships in Ecosystems**
   ... include urbanization, building dams, and dissemination of **invasive species**.] HS-LS2-8. Evaluate evidence for the role of ...
3. **HS-LS2 Ecosystems: Interactions, Energy, and Dynamics**
   ... include urbanization, building dams, and dissemination of **invasive species**.] HS-LS2-8. Evaluate evidence for the role of ...
4. **HS-LS4 Biological Evolution: Unity and Diversity**
   ... results from four factors: (1) the potential for a **species** to increase in number, (2) the heritable genetic variation of ... habitat destruction, pollution, introduction of **invasive species**, and climate change. Thus sustaining biodiversity so that ... habitat destruction, pollution, introduction of **invasive species**, and climate change. Thus sustaining biodiversity so that ...
5. **HS-LS4-6 Biological Evolution: Unity and Diversity**
   ... for a proposed problem related to threatened or endangered **species**, or to genetic variation of organisms for multiple **species**.] ... habitat destruction, pollution, introduction of **invasive species**, and climate change. Thus sustaining biodiversity so that ...

1. **MS-LS2-5 Ecosystems: Interactions, Energy, and Dynamics**
   ... design solutions for maintaining biodiversity and **ecosystem** services.* [Clarification Statement: Examples of **ecosystem** ... as a measure of its health. LS4.D: Biodiversity and **Humans** Changes in biodiversity can influence **humans**' resources, such as ...
2. **HS-LS2-7 Ecosystems: Interactions, Energy, and Dynamics**
   ... Disciplinary Core Ideas LS2.C: **Ecosystem** Dynamics, Functioning, and Resilience Moreover, ... some species. LS4.D: Biodiversity and **Humans** Biodiversity is increased by the formation of new ...
3. **MS.Interdependent Relationships in Ecosystems**
   ... design solutions for maintaining biodiversity and **ecosystem** services.* [Clarification Statement: Examples of **ecosystem** ... of its health. (MS-LS2-5) LS4.D: Biodiversity and **Humans** Changes in biodiversity can influence **humans**' resources, such as ...
4. **3-LS4-4 Biological Evolution: Unity and Diversity**
   ... problem. Disciplinary Core Ideas LS2.C: **Ecosystem** Dynamics, Functioning, and Resilience When the environment ... some die. (secondary) LS4.D: Biodiversity and **Humans** Populations live in a variety of habitats, and change in those ...
5. **MS-LS2 Ecosystems: Interactions, Energy, and Dynamics**
   ... availability on organisms and populations of organisms in an **ecosystem**. [Clarification Statement: Emphasis is on cause and effect ... of its health. (MS-LS2-5) LS4.D: Biodiversity and **Humans** Changes in biodiversity can influence **humans**' resources, such as ...
6. **HS.Interdependent Relationships in Ecosystems**
   ... conditions, but changing conditions may result in a new **ecosystem**. [Clarification Statement: Examples of changes in **ecosystem** ... some species. (HS-LS4-6) LS4.D: Biodiversity and **Humans** Biodiversity is increased by the formation of new species ...
7. **HS-LS2 Ecosystems: Interactions, Energy, and Dynamics**
   ... of matter and flow of energy among organisms in an **ecosystem**. [Clarification Statement: Emphasis is on using a mathematical ... relatives. (HS-LS2-8) LS4.D: Biodiversity and **Humans** Biodiversity is increased by the formation of new species ...

https://www.nextgenscience.org

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seven common thread resources

Master Resource List.xlsx
Modified on January 22

Resource ID	Title	original URL	current URL	4-5 (resource out of 20)	6-8 (resource out of 30)	9-12 (resource out of 40)	Ad ou
BL04	Everglades Burmese Python Challenge: The Hunt for an Invasive Species	http://www.captainmitchs.com/airboat,tour,ride,evergladescity,captainmitch,adventures,capt,fishing,fish,/everglades-burmese-python/		1	1	1	
WE06	Burmese pythons in Florida	https://en.wikipedia.org/wiki/Burmese_pythons_in_Florida		2	2	2	
WE02	Burmese Pythons: Research	http://www.nps.gov/ever/learn/nature/burmesepythonresearch.htm		3	3	3	
MA07	Pythons Attack the Everglades	http://www.timeforkids.com/news/pythons-attack-everglades/28101	http://jobs4thgrade.weebly.com/uploads/4/0/4/5/40345734/pythons_attack_the_everglades.pdf	4	26		
WE16	Giant Snake of the Everglades - The Invasive Burmese Python	https://youtu.be/P_LluzEoJ_Y		5	30	40	
MA04	Invasion of the Burmese python: everyone is welcome in America--except these snakes.	go.galegroup.com/ps/i.do?p=ITKE&sw=w&u=22054_acld&v=2.1	&id=GALE%7CA371969058&it=r&asid=b3fb74a71db		d23f135b1b96396217d83		
BK09	Python, Burmese	go.galegroup.com/ps/i.do?p=ITKE&sw=w&u=22054_acld&v=2.1	&id=GALE%7CCX3627500255&it=r&asid=9b382db3		9a4c77bfa185e006b587451		
MA08	Pythons Eating Through Everglades Mammals at "Astonishing" Rate?	http://news.nationalgeographic.com/news/2012/01/120130-florida-burmese-pythons-mammals-everglades-science-nation/		8	6		
WE01	The Everglades Under Attack. A Burmese Python Invasion	http://pythonpatrol.weebly.com/		9	7	7	
MA01	Burmese Pythons are Taking Over the Everglades	http://time.com/3752598/burmese-pythons-taking-over-everglades/		10			

BK06: The Effects of Burmese Pythons on Everglades Ecosystems
http://www.csus.edu/envs/Documents/Theses/Spring%202015/851.2015.Spring.pdf

BK07: Invasive Pythons in the United States: Ecology of an Introduced Predator
https://books.google.com/books?id=6KkFcpAHGl8C&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

BL04: Everglades Python Challenge: The Hunt for an Invasive Species
http://www.captainmitchs.com/airboat,tour,ride,evergladescity,captainmitch,adventures,capt,fishing,fish,/everglades-burmese-python/

JL06: Ecology: Snakes wipe out Everglades rabbits.
http://www.nature.com/nature/journal/v519/n7544/full/519393d.html

WE01: Everglades Under Attack. A Burmese Python Invasion.
http://pythonpatrol.weebly.com/

WE02: Burmese Pythons: Research
http://www.nps.gov/ever/learn/nature/burmesepythonresearch.htm

WE06: Burmese pythons in Florida
https://en.wikipedia.org/wiki/Burmese_pythons_in_Florida

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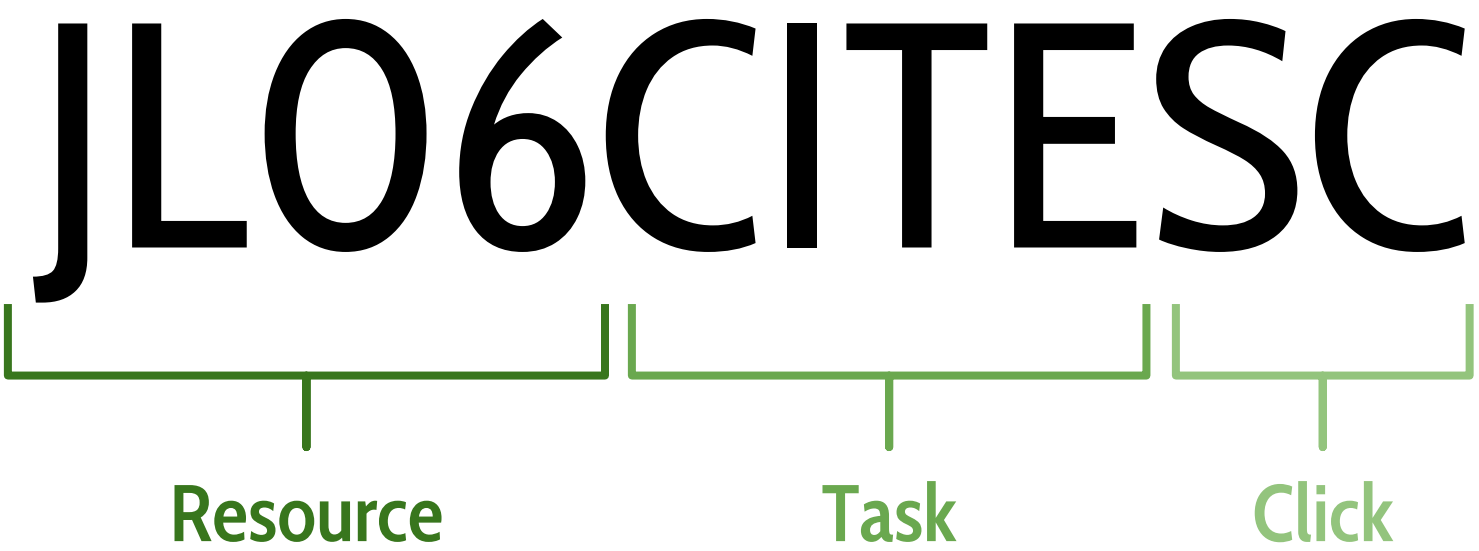
partnerships: instructional designer & programmer

Build Software:

Articulate's Storyline 2

Data Extraction Software:

Uniform Server


JL06CITESC
Resource
Task
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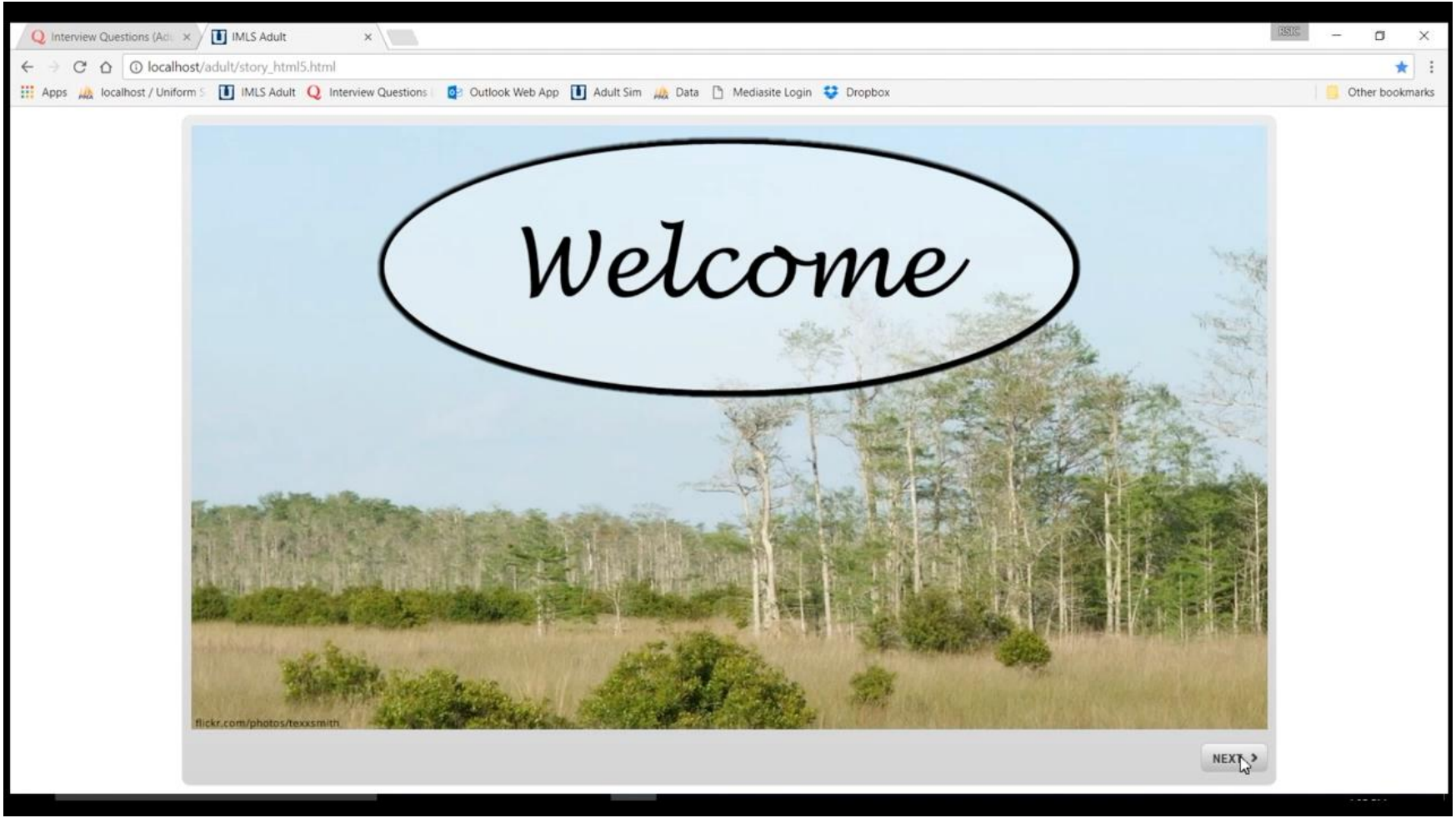
Interview Questions (Ad
IMLS Adult
localhost/adult/story_html5.html
Apps
localhost / Uniform
IMLS Adult
Interview Questions
Outlook Web App
Adult Sim
Data
Mediasite Login
Dropbox
Other bookmarks
Welcome
flickr.com/photos/texxsmith
NEXT

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Takeaways
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Data Cleaning & Quality Control
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quantitative data cleaning & preparation

Combining Raw Data	Creating Variables	Cleaning Data
1. Combine survey and interview responses for each cohort 2. Combine all cohorts' survey and interview data with all cohorts storyline data	1. Facilitate combining cohorts 2. Quantify open-ended text responses 3. Replace facilitator text input with more accurate transcription of participants' audio recorded responses 4. Capture additional information not included in raw data	1. Correct inaccurate and incomplete cases 2. Change cases to indicate that no response was given when appropriate 3. Remove redundancies 

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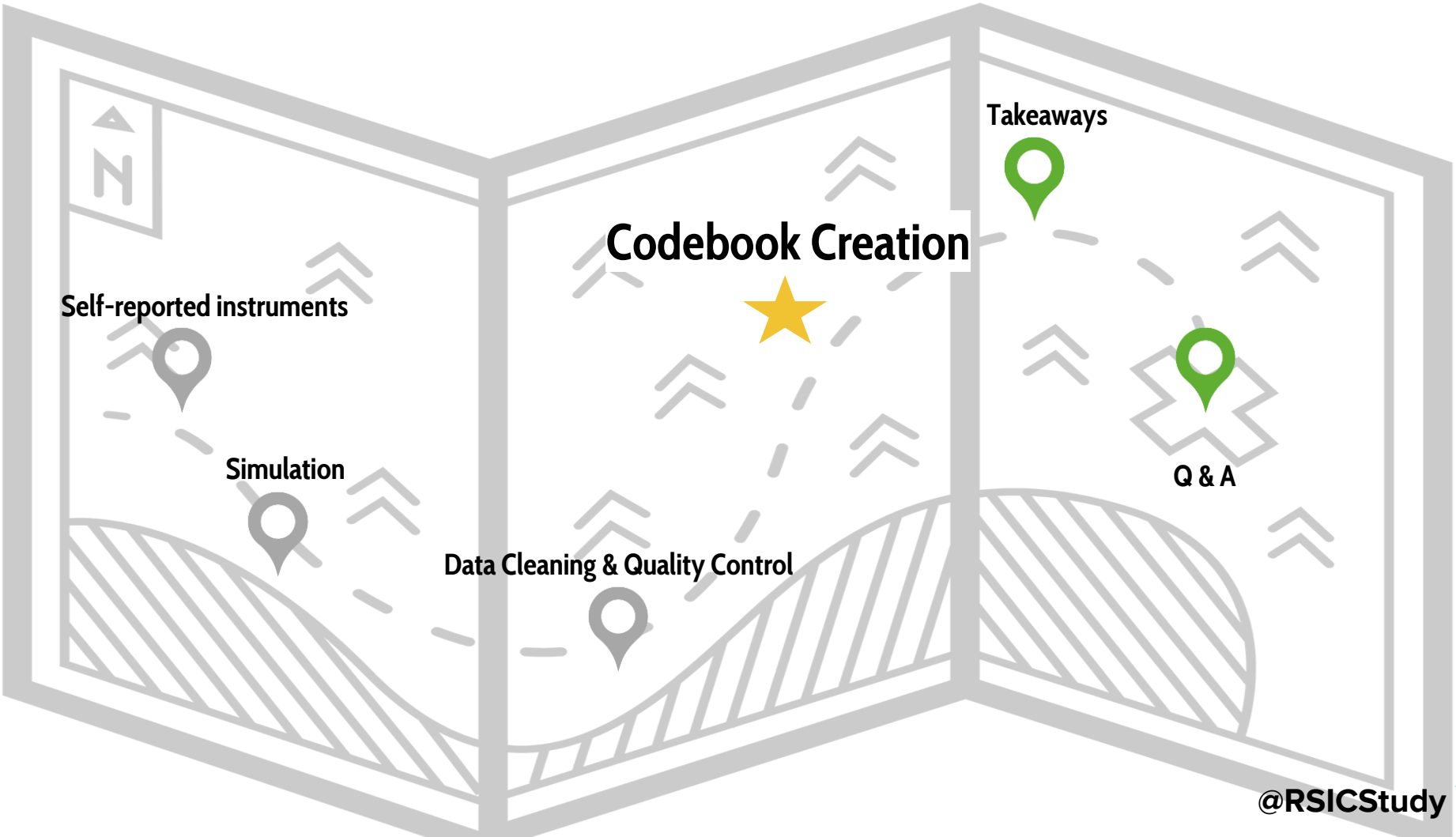
qualitative data cleaning and preparation

1. Select a transcription service
2. Send audio for transcription
3. Review, clean, and scrub transcripts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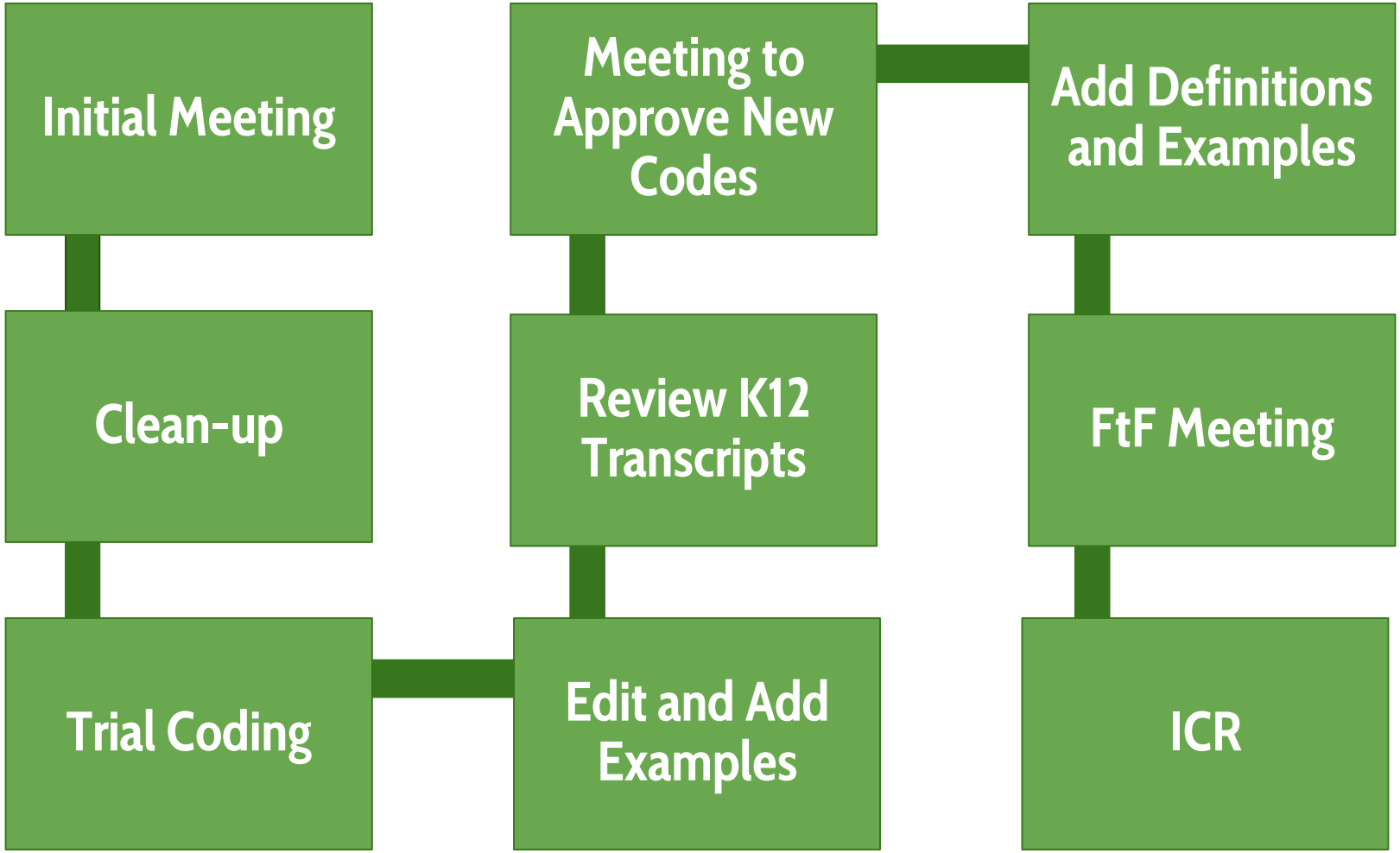
what is coding?

"The goal of coding is ultimately data reduction..."

(Connaway & Radford, 2017, p. 299)


Initial Meeting
Clean-up
Trial Coding
Edit and Add Examples
Review K12 Transcripts
Meeting to Approve New Codes
Add Definitions and Examples
FtF Meeting
ICR

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selecting transcripts

- 3 transcripts from each cohort
- Variety of session lengths
- Recommendations from facilitators

sources for themes and codes

- Transcript analysis
- Literature
- Data collection instruments

codebook structure

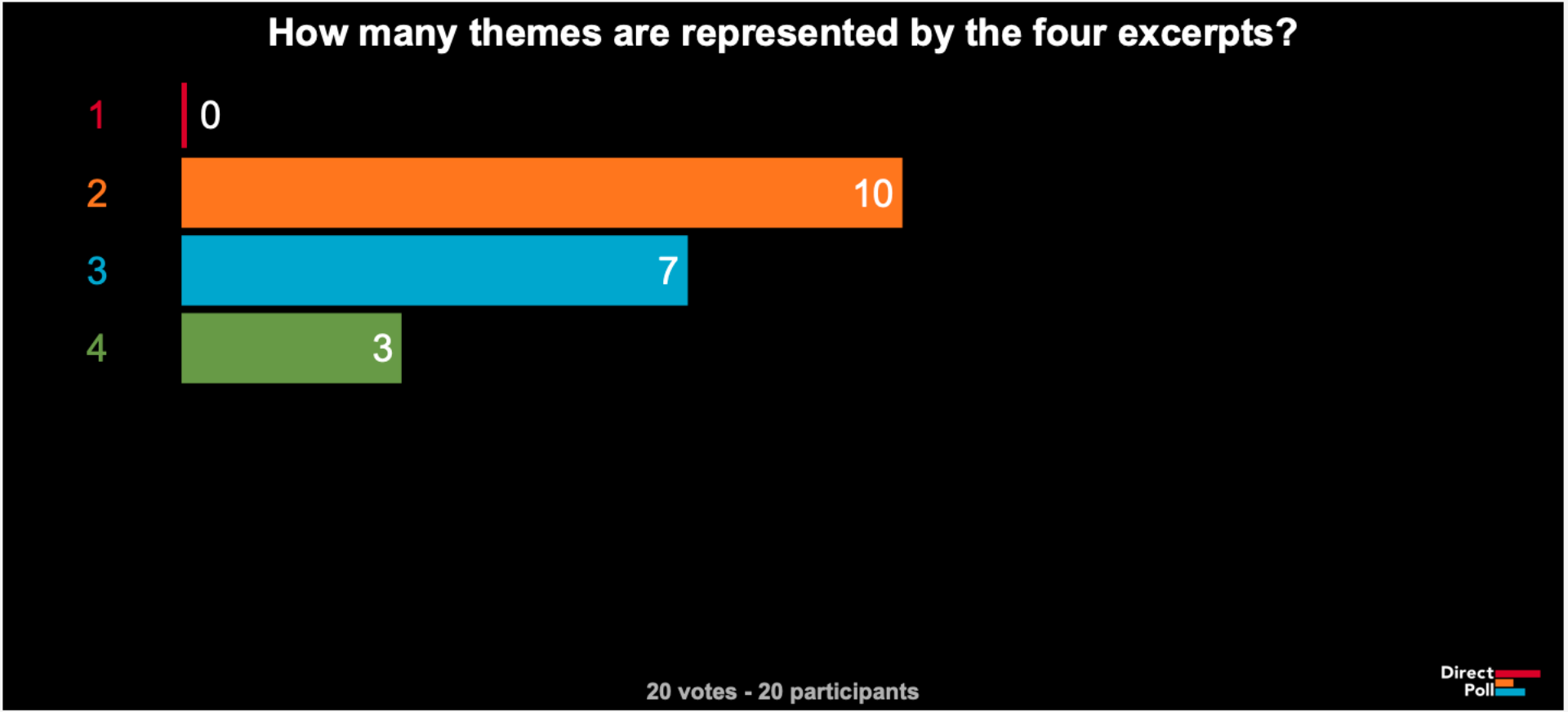
- Based on:
  - Patterns in identified themes
  - Research questions
- 3 Sections
  - Cues
  - Judgments
  - Personal Commentary

fun with coding

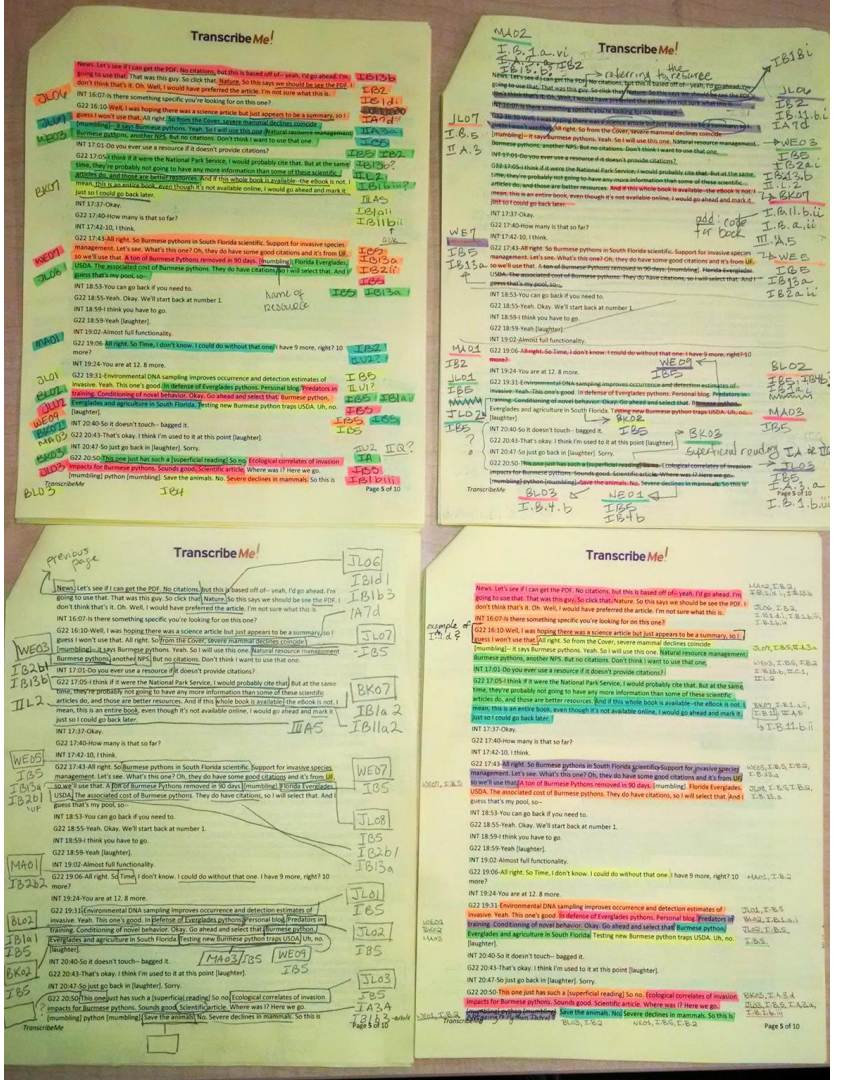
are these the same concept?

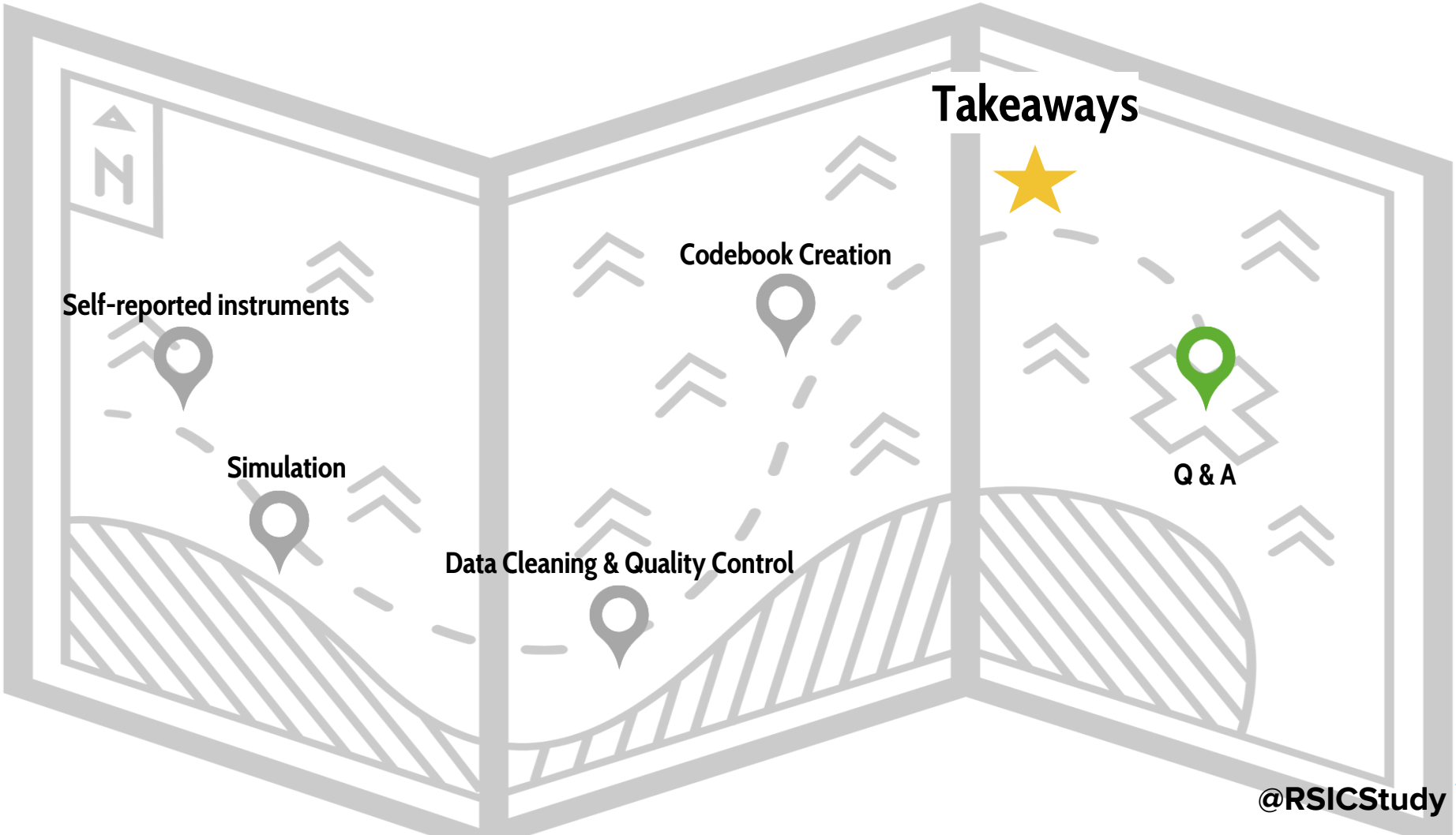
- “This is kind of like **a counterargument** of what I would say. So it's going to have both sides.” (U23 45:04)
- “So this is interesting because the title is actually suggesting that it is going to take **a different viewpoint**” (H20 25:48)
- “I don't like Wikipedia because other people can give you different information and **their opinion**, so I don't use Wikipedia.” (E14 04:07)
- “TIME Magazine I'll just put somewhat credible because I'm sure there's **some kind of bias** involved in the magazine setting.” (G01 48:16)

http://etc.ch/HHyd



inter-coder reliability

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TEAM BUILDING

EACH PERSON CONTRIBUTES IN DIFFERENT WAYS.
INVITE PEOPLE WHO KNOW THINGS YOU DON'T KNOW.

TIMING

EVERYTHING WILL TAKE LONGER THAN YOU THINK.
BE GENEROUS WITH YOUR PLANNING.

RECRUITMENT

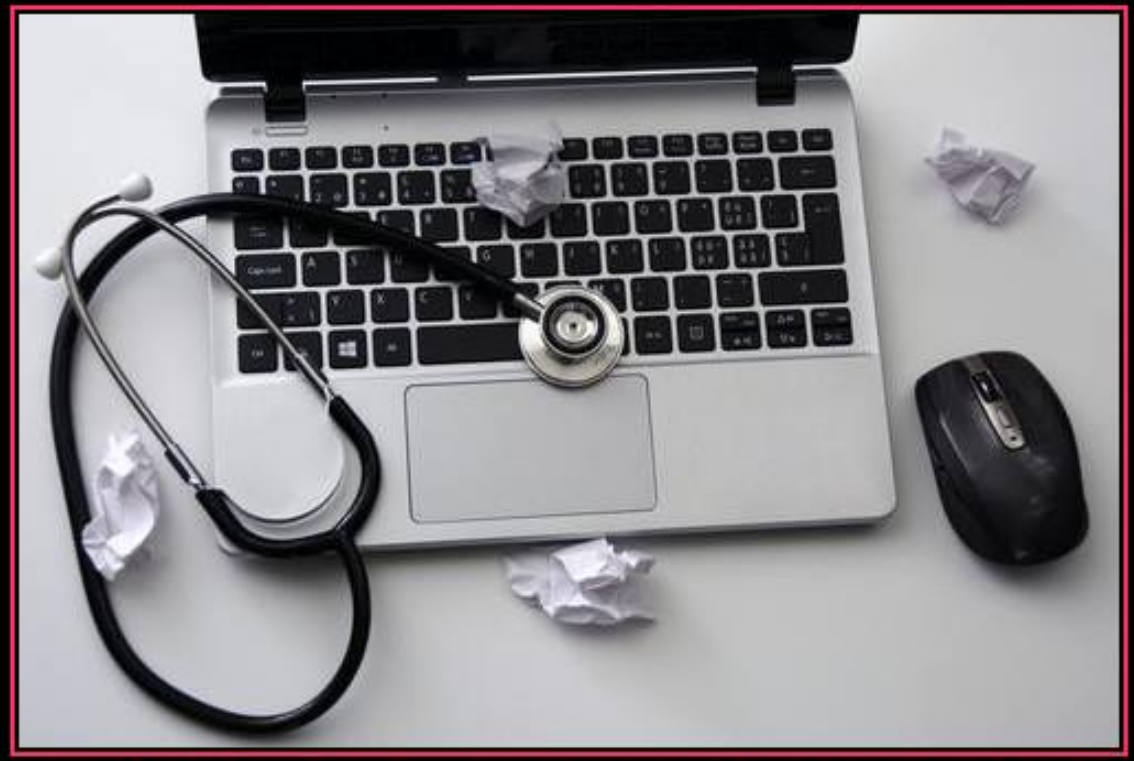
It's good to have a partner on the inside. You need someone to advocate for you.

COMMUNICATE

THINK STRATEGICALLY ABOUT WHAT TOOLS YOU USE TO COMMUNICATE ACROSS YOUR TEAM AND WITH THE AP.

FILE STORAGE

PLAN YOUR STORAGE SYSTEM EARLY AND STICK TO IT. YOUR FUTURE SELF WILL THANK YOU.

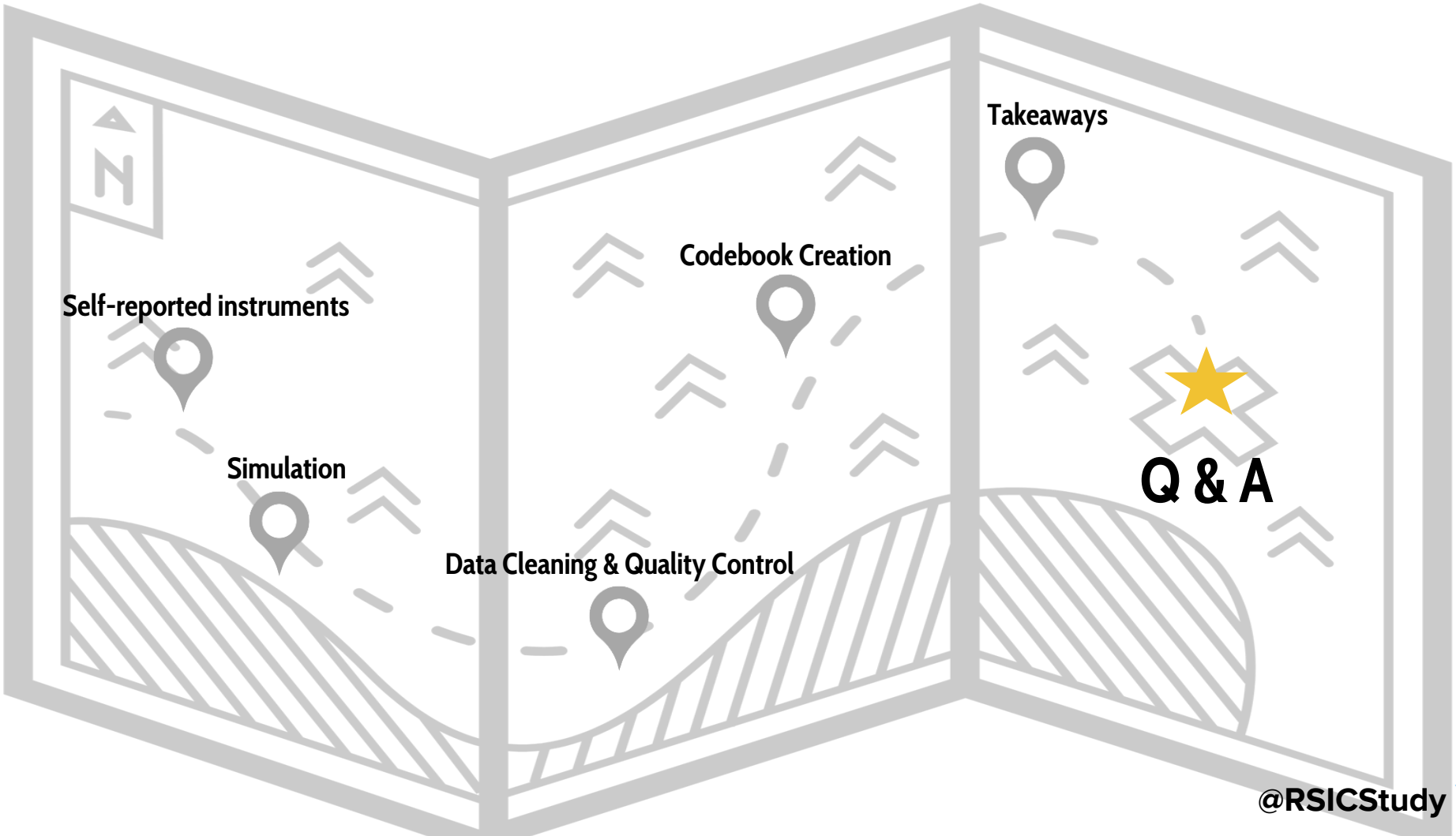


DATA MANAGEMENT

YOUR DATA IS PRECIOUS. MAKE PLANS TO ENSURE THAT IT STAYS SAFE.

PLAN FOR DATA SHARING & REUSE

DOCUMENT EVERYTHING THAT YOU ARE DOING WITH YOUR DATA AND CLEAN AS YOU GO. THIS MAKES IT EASIER TO SHARE AND REUSE LATER.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We Made It!

Questions?

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