

# **An Emergent Design Study Methodology for Education: Reflections on the Robin System for Visualizing U.S. Migration Data**

**Alexander Bendeck**, Clio Andris, & John Stasko

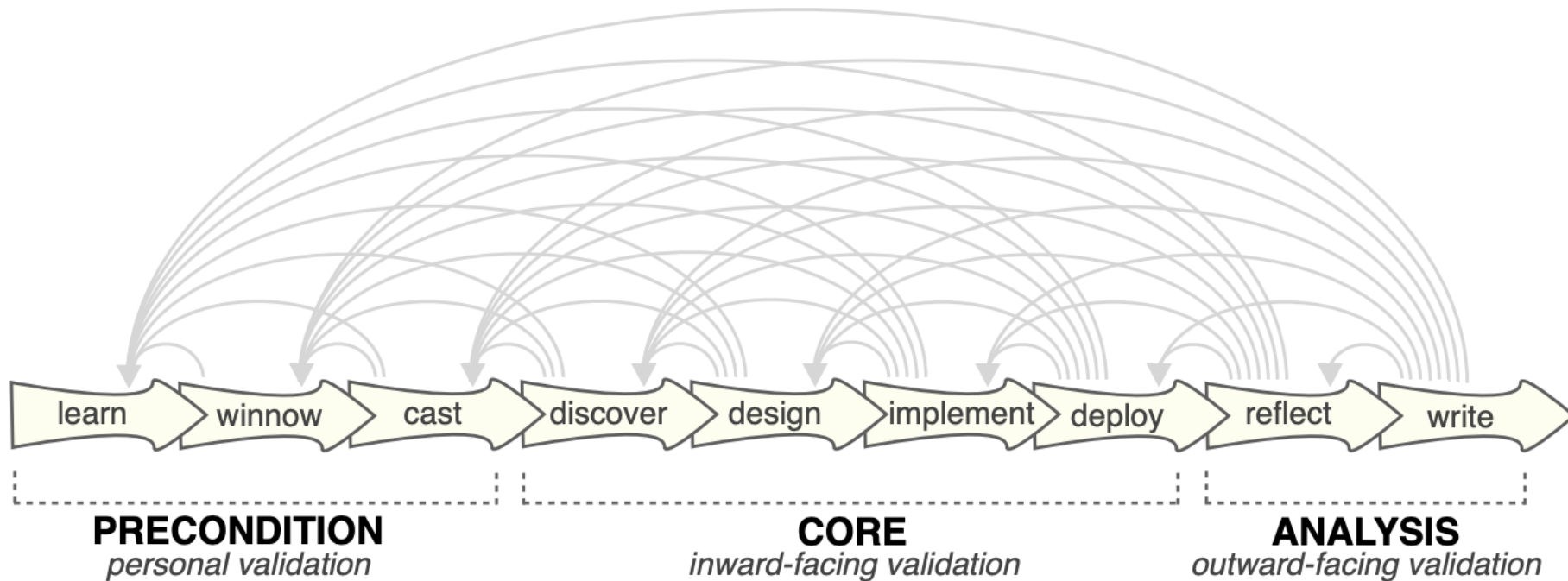
School of Interactive Computing

Georgia Institute of Technology



# Visualization Design Study Methodology<sup>1</sup>

- 9-step approach to vis research collaborations with domain experts



[1] Sedlmair, Michael, *et al.* "Design study methodology: Reflections from the trenches and the stacks." *IEEE TVCG* 18.12 (2012): 2431-2440.

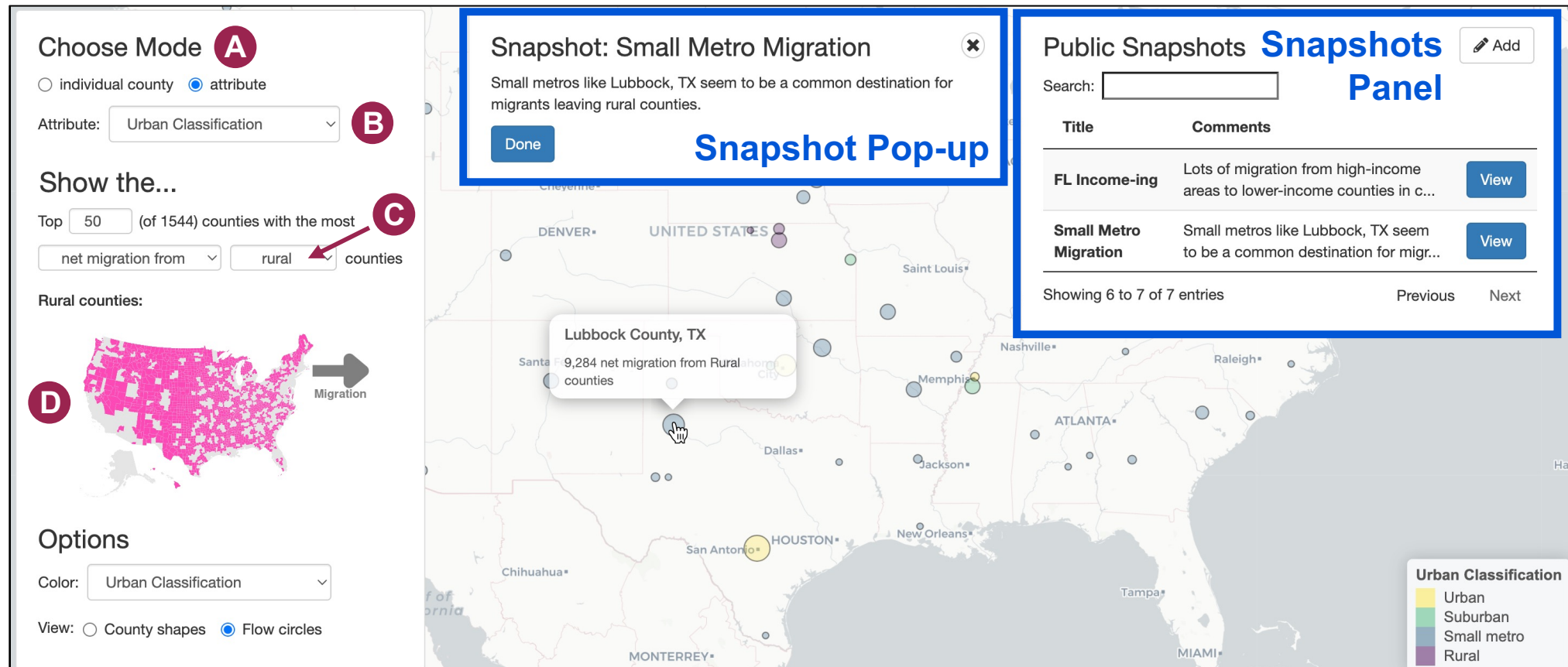
# Educational Context is Different

- Not just about “domain expert” stakeholders
  - Domain expert educators
  - Non-expert students
- **Focus** is not on advanced analysis
  - Educators: Instruction & demonstration
  - Students: Guided exploration
- How might we modify the traditional design study methodology to better suit this context?

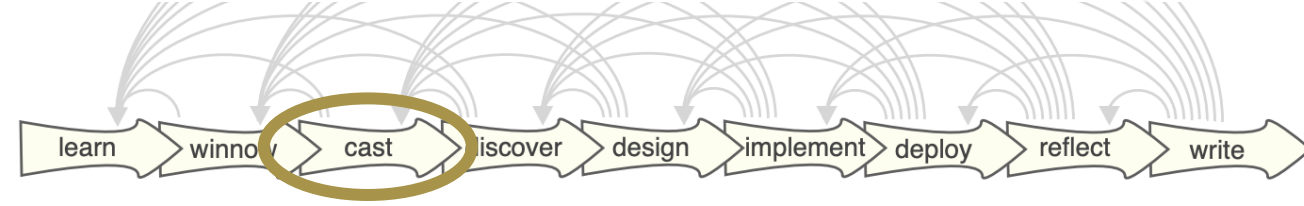


# The Robin System

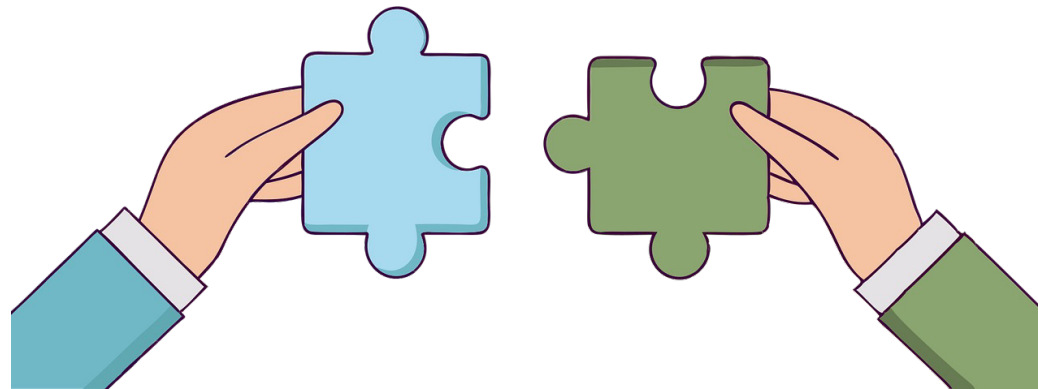
- Educational tool for U.S. migration data at county level
  - Shows **migration + other attributes** (e.g., income, voting)
  - **Engages non-expert users** w/ interactive quiz & social “snapshots”



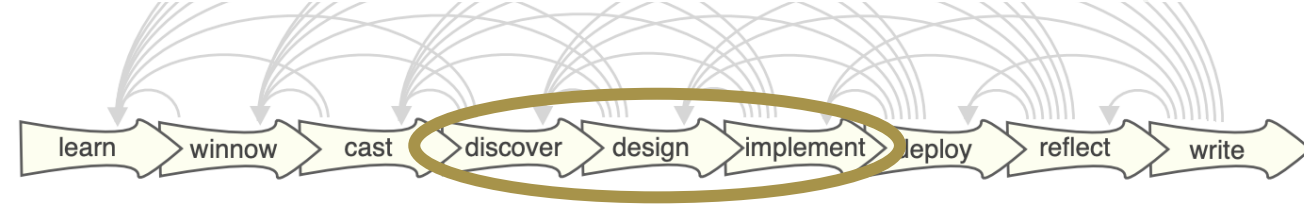
# Cast



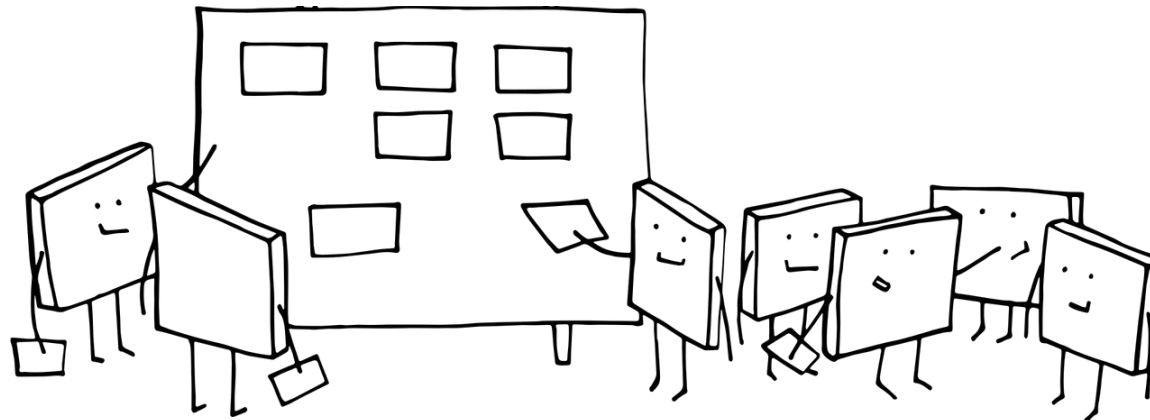
- **Front-line analysts** (end users)
  - Broader for us: Both educators & students
- **Connectors** help researchers find users
- **Translators** re-frame problems → broad goals
- Connectors & Translators have **increased importance** for us
  - Domain-expert author at first, then snowballing with external collaborators



# Discover, Design, Implement

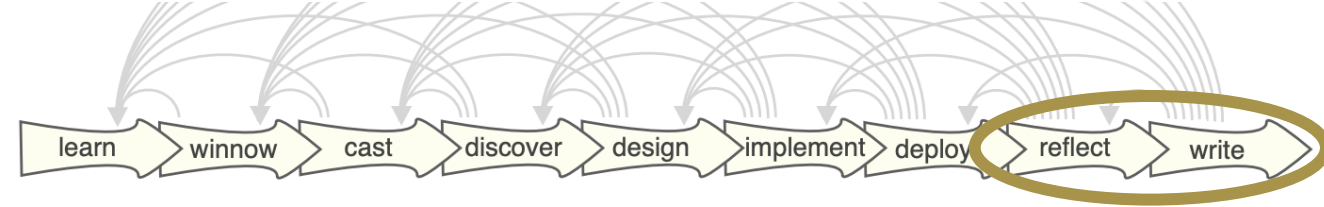


- Elicit requirements → Choose encodings & interactions → Build tool
- For us, **multiple iterations were critical**
  - Phase 1: First prototype, evaluate usability with **vis practitioners**
  - Phase 2: Improve learnability for non-experts, share w/ **educators & students**
  - Phase 3: Tweak final system, validate again with **educators**

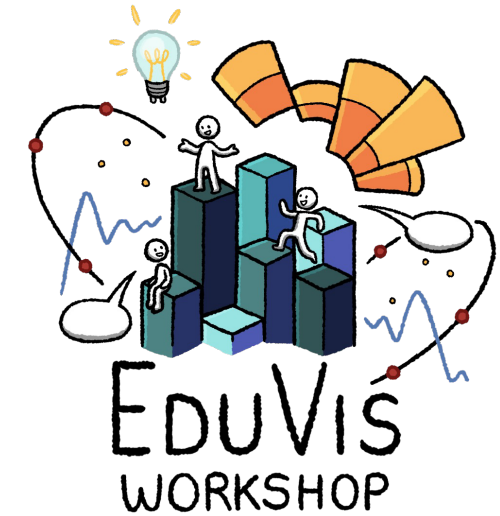




# Reflect & Write



- **Methodology-focused paper** here at EduVis
  - Focus on educational benefits & implications
- **System-focused paper** at HICSS
  - Share & discuss with geographic data experts



HICSS

## **ROBIN: An Interactive Visualization System and Instructional Tool to Democratize United States Domestic Migration Data**

Alexander Bendeck  
Georgia Institute of Technology  
[abendeck3@gatech.edu](mailto:abendeck3@gatech.edu)

Clio Andris  
Georgia Institute of Technology  
[clio@gatech.edu](mailto:clio@gatech.edu)

John Stasko  
Georgia Institute of Technology  
[john.stasko@cc.gatech.edu](mailto:john.stasko@cc.gatech.edu)

# Thank you!

[abendeck3@gatech.edu](mailto:abendeck3@gatech.edu)