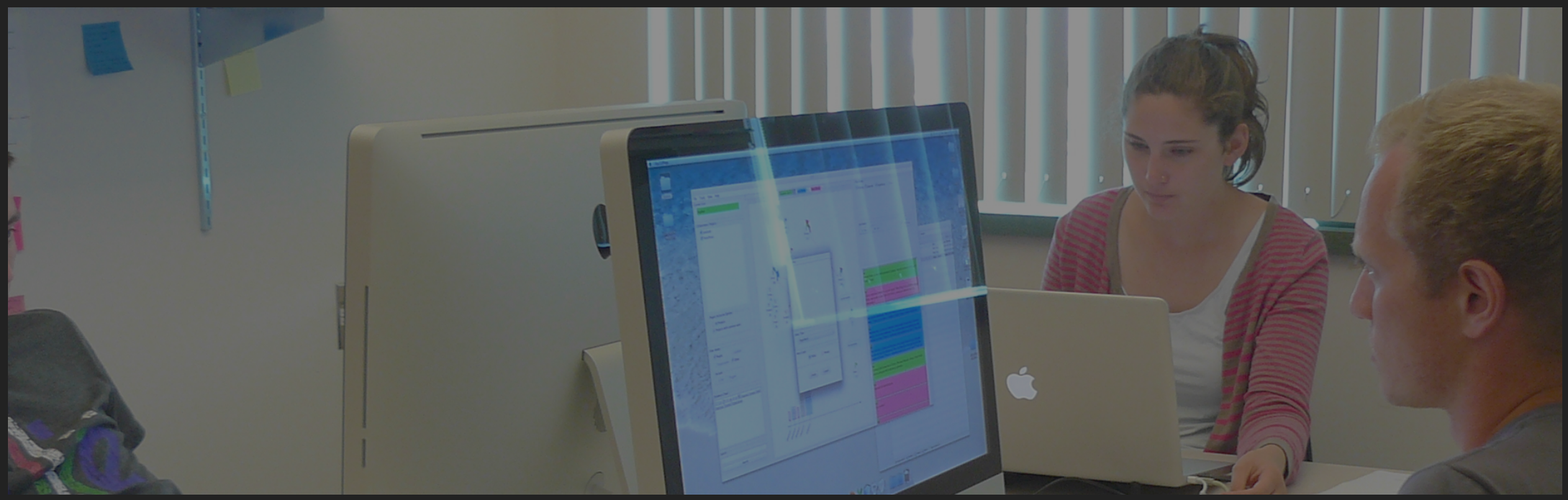
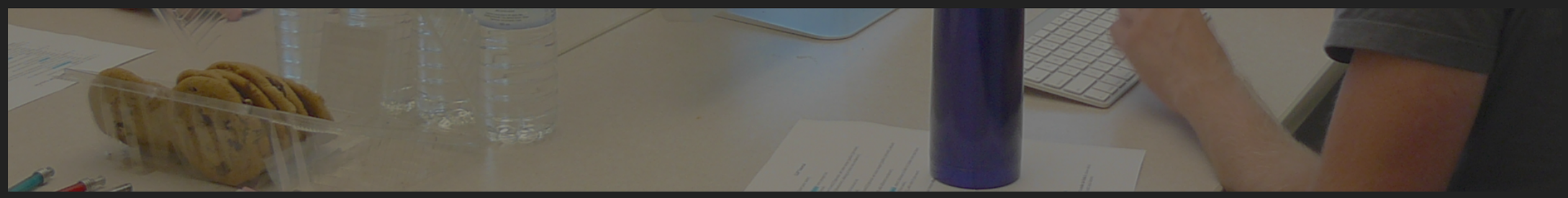
CLIP (COLLABORATIVE INTELLIGENT PAD)



CLIP is a collaborative thinking space that helps people to record, organize, and share their externalizations.

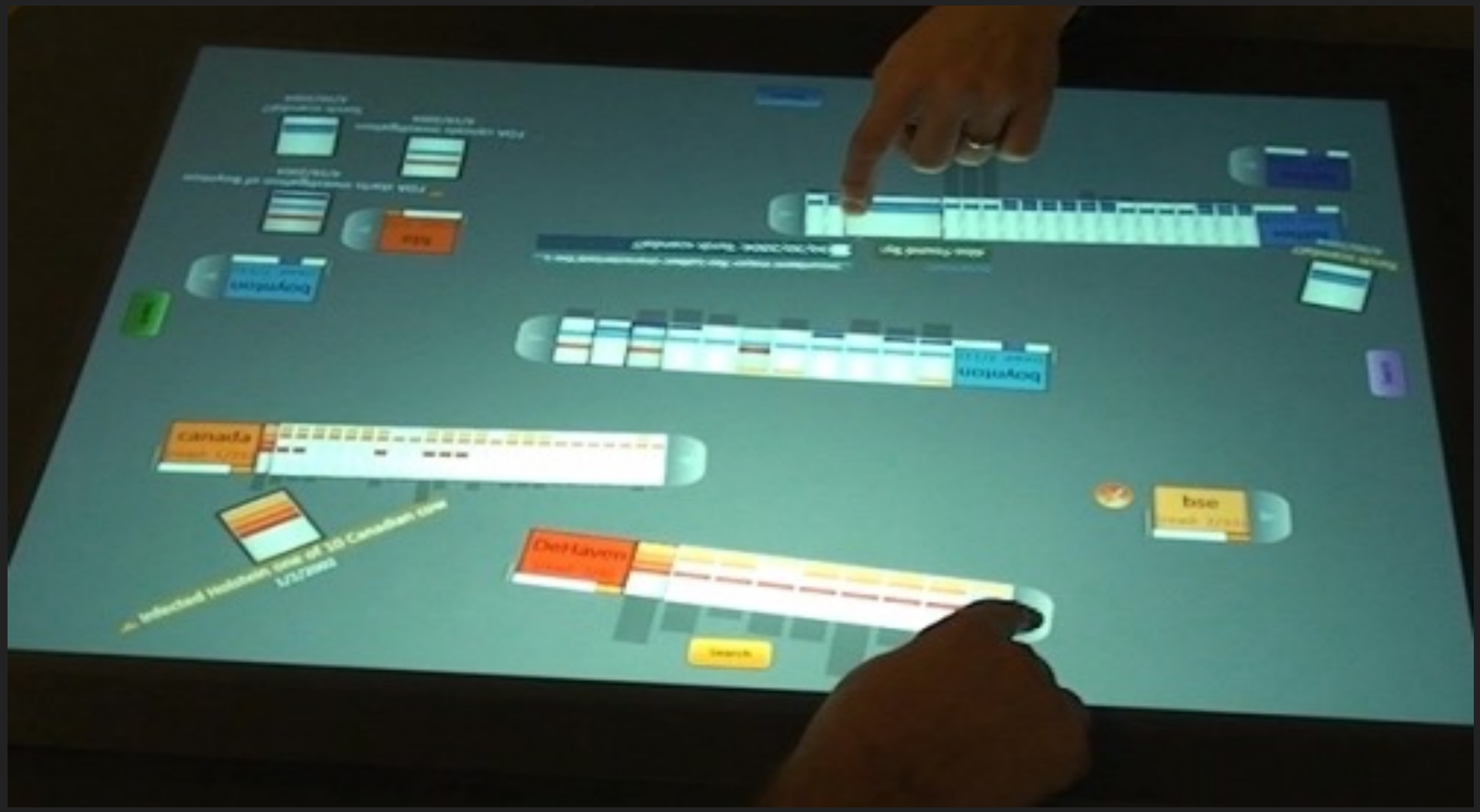


Narges Mahyar and Melanie Tory, "Supporting Communication and Coordination in Collaborative Sensemaking", IEEE Transaction on Visualization and Computer Graphics (VAST 14), 2014. [Best Paper Award]

RESEARCH PROBLEMS

- How to support collaborative sensemaking?
- How to support externalizations?
  - organize, record, and share findings, hypotheses, and evidence.
- Evaluate the effect on **awareness**, **communication** & **coordination**?

CAMBIERA: FOR COLLOCATED VISUAL ANALYTICS OF DOCUMENT COLLECTIONS



Isenberg & Fisher, 2012

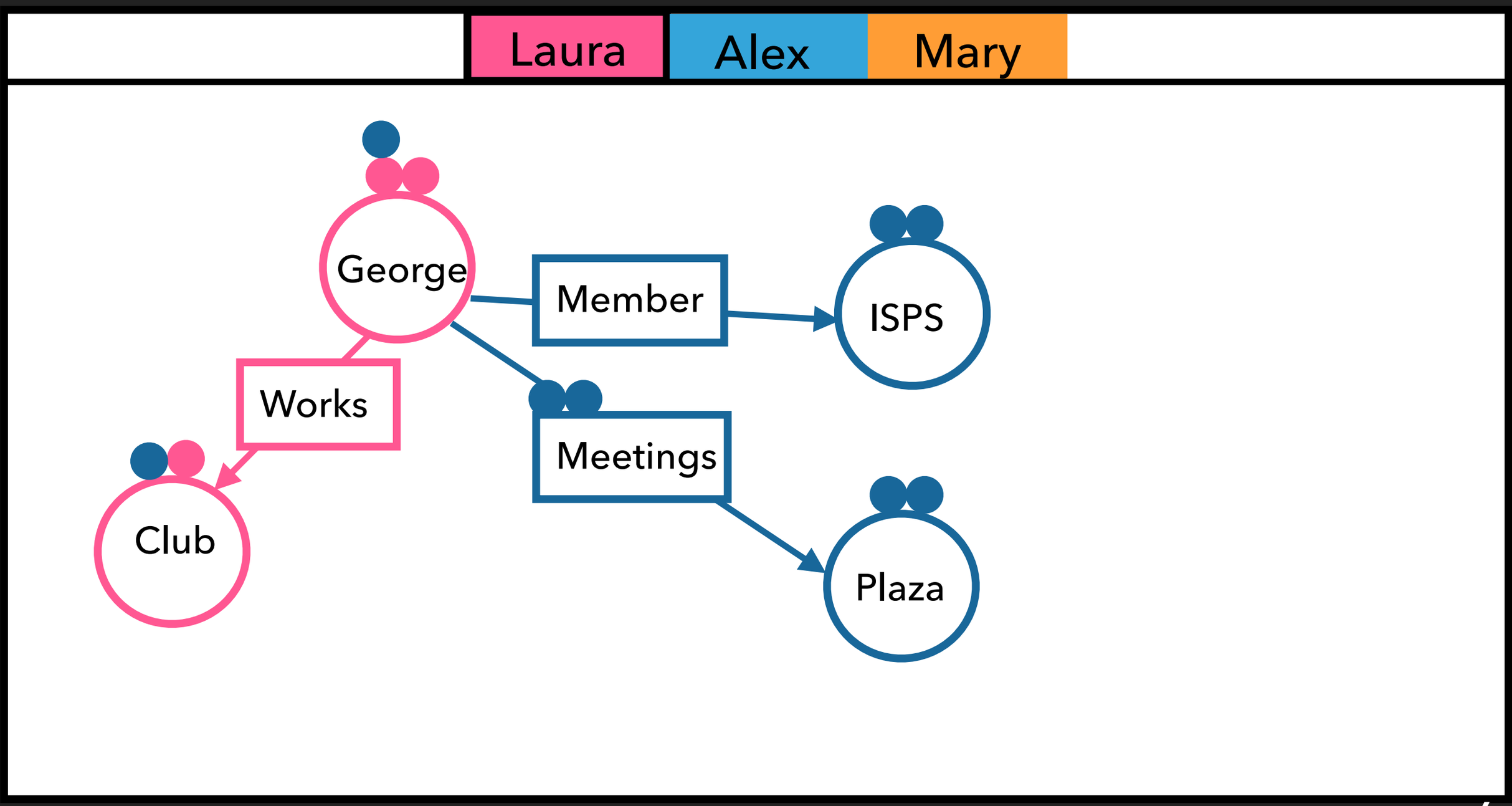
CONTEXT

- Task: VAST 2006 challenge, a mystery task
- Dataset: 240 documents
- Setting: Collocated collaborative analysis

LINKED COMMON WORK (LCW)

- **LCW**: automatically Identifying and visually representing similarities between collaborators' work
  - Partial merging
  - Full merging

PARTIAL VS. FULL MERGING



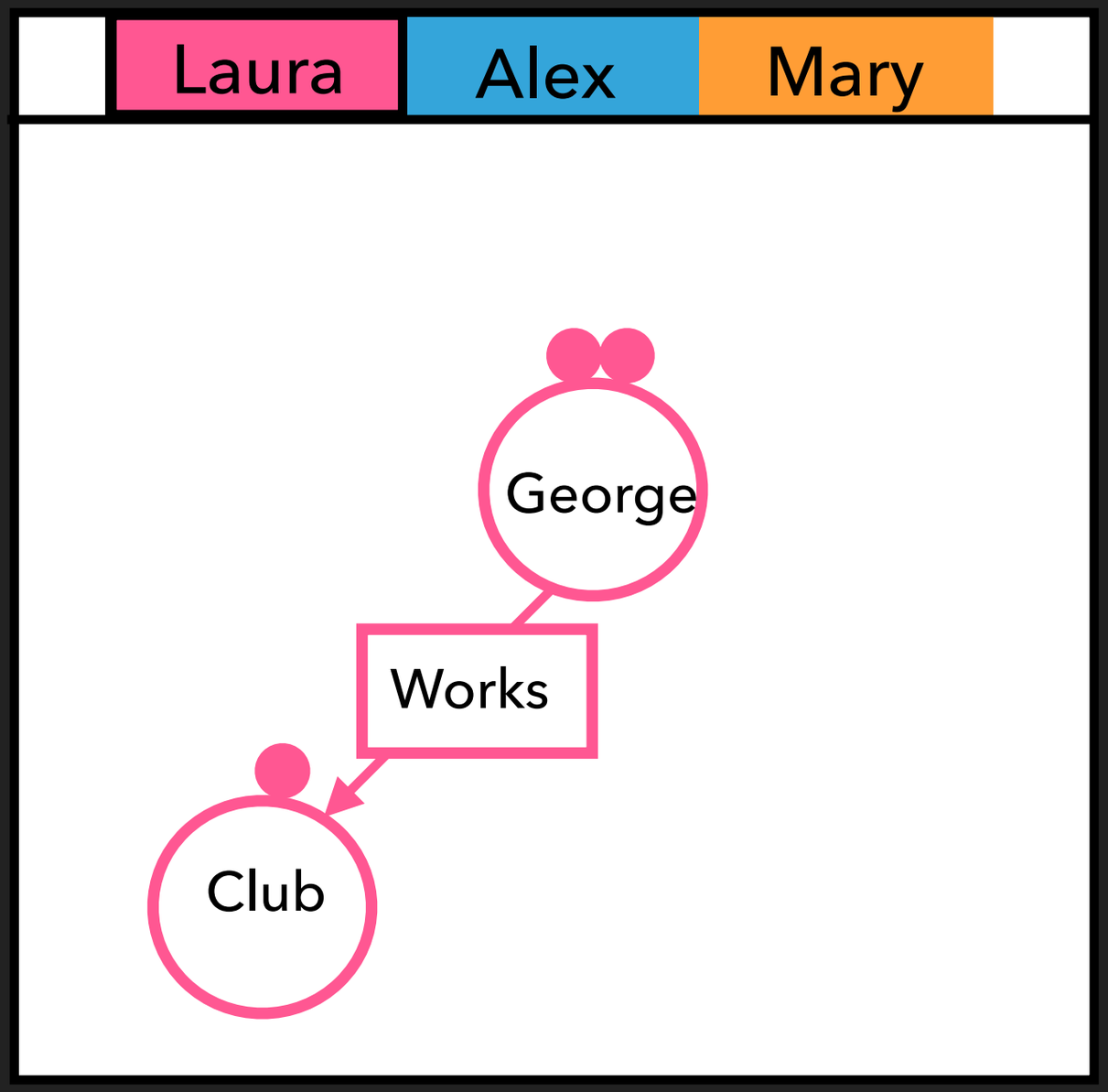
CLIP: VIDEO

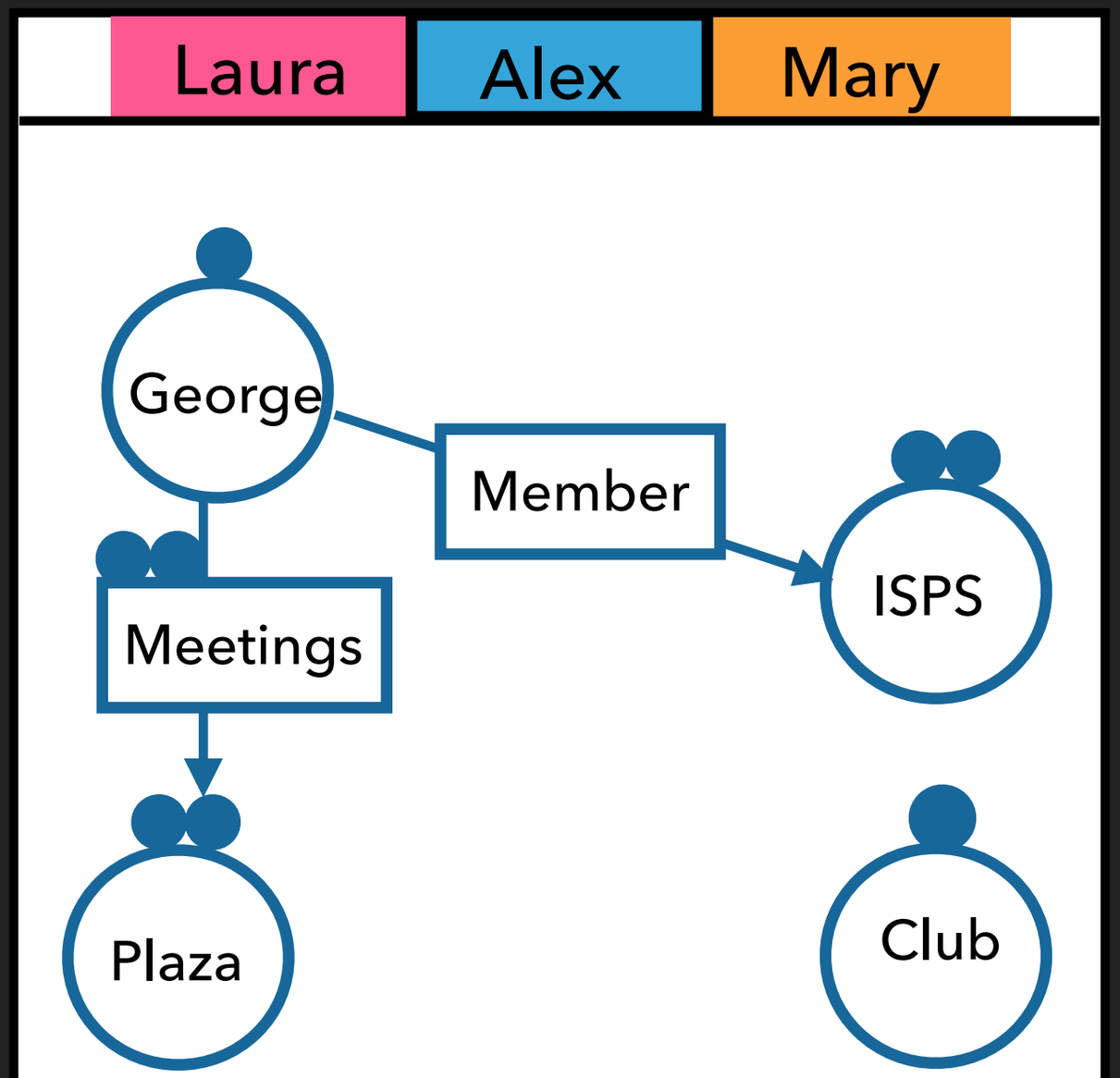

CLIP: A Collaborative Visual Thinking Space to Support
Joint Sensemaking

EVALUATION OF LINKED COMMON WORK (LCW)

- Experimental comparison of CLIP to a baseline tool
- Baseline tool: CLIP without LCW

BASELINE TOOL





USER STUDY & DATA GATHERING

- 16 groups of 3, 8 groups in each condition
  - Worked for 90 minutes
  - Used CLIP or Baseline
- Followed by semi-structured interview

HYPOTHESES

- Linked Common Work will improve:
  - H1: Performance
  - H2: Communication
  - H3: Coordination
  - H4: Awareness

METRICS AND ANALYSIS

- Performance
  - Scoring scheme (from Isenberg et al., 2012):
    - Positive points for finding and connecting relevant facts
    - Negative points for incorrect hypotheses
- Number of key documents found (out of 10)

METRICS AND ANALYSIS: DEVELOPING NEW METRICS

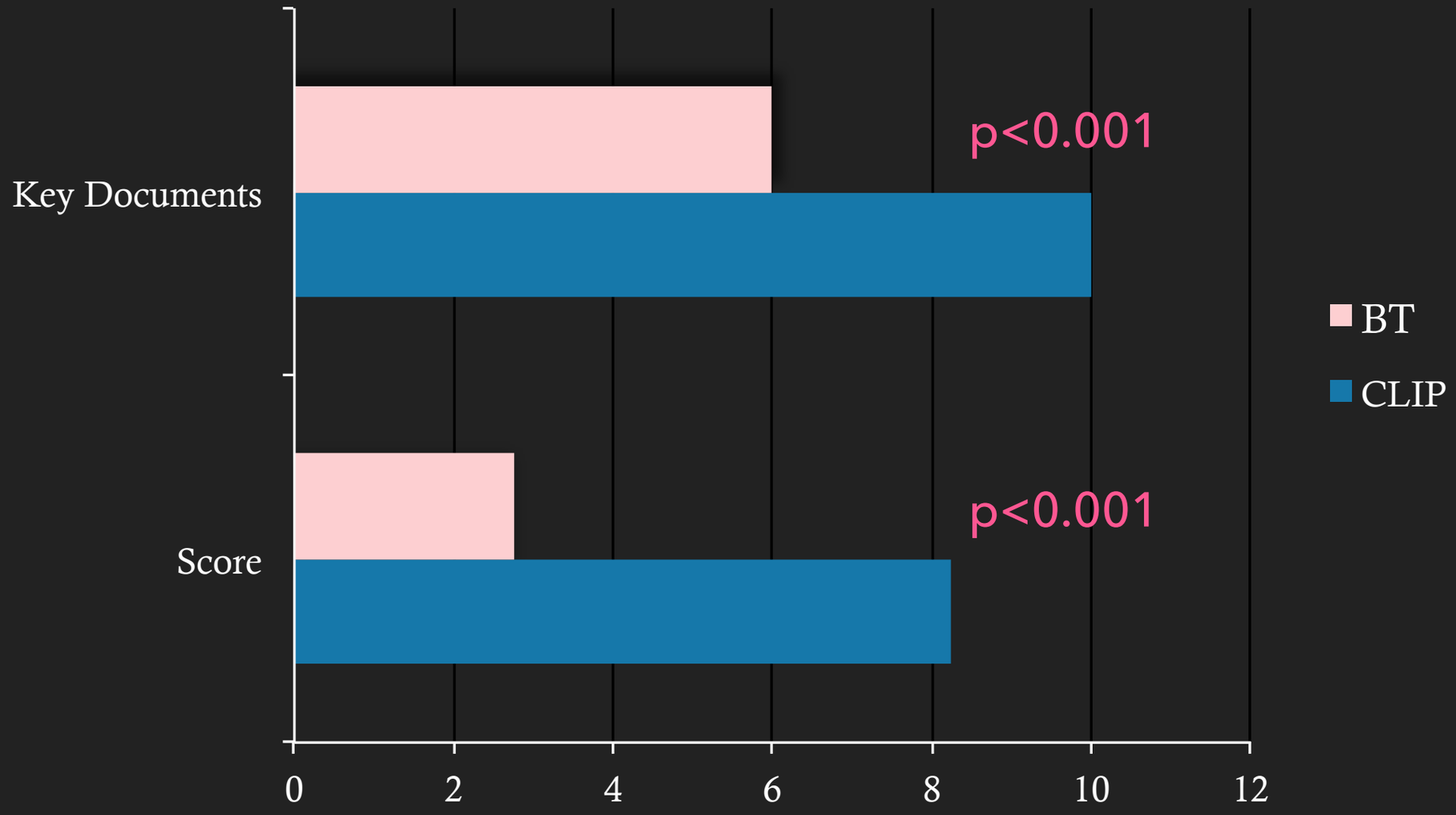
- Conversation analysis
  - Classified and counted statements of 7 different types
    - 2 coders, Krippendorff's alpha = 0.91
- Spent around **520 hours** on data analysis

METRICS SCHEME

DH	Discussion / generating Hypotheses
RV	Referring to Visualization
CO	Coordination
SA	Seeking Awareness
VF	Verbalizing Findings
QF	Question about Findings
RU	Related but uncategorized

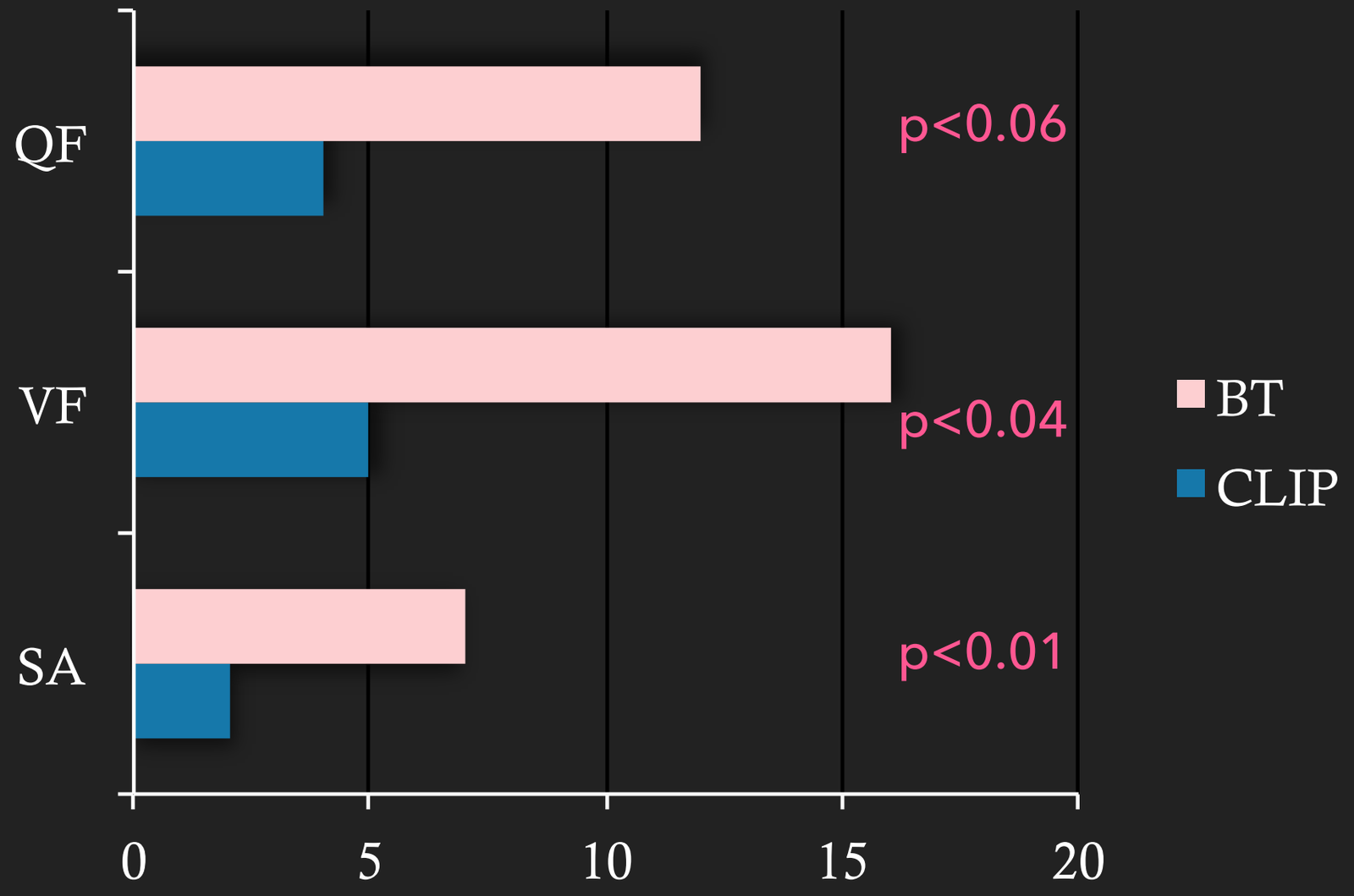
HYPOTHESES

H1: Better performance



HYPOTHESES

H4: Less reliance on verbal communications for awareness



FUTURE APPLICATIONS OF THIS PROJECT

- LCW for different domains, e.g. co-authoring documents
- LCW for different collaborative settings, e.g. distributed software development