Trust in Visualization (and what it has to do with Theory)
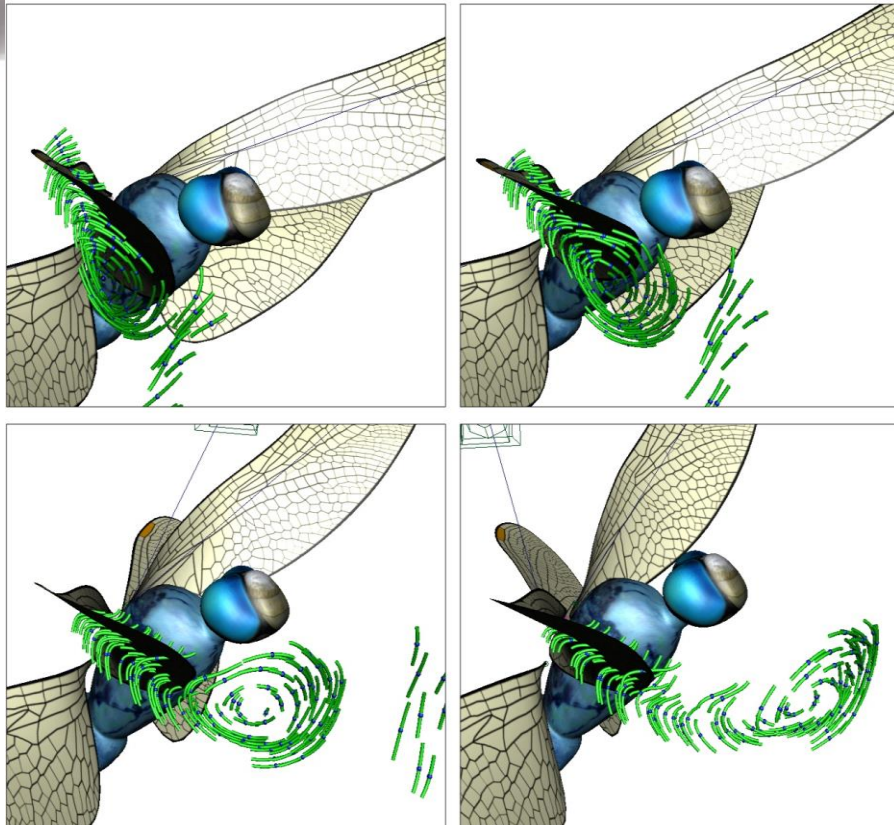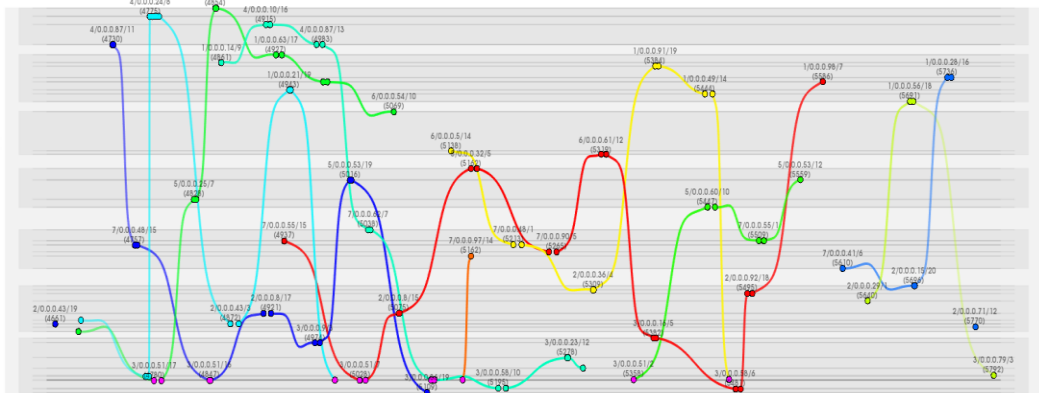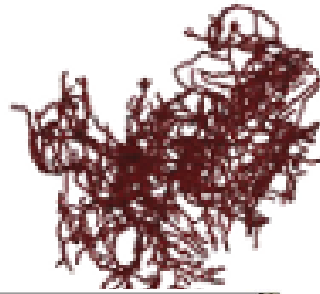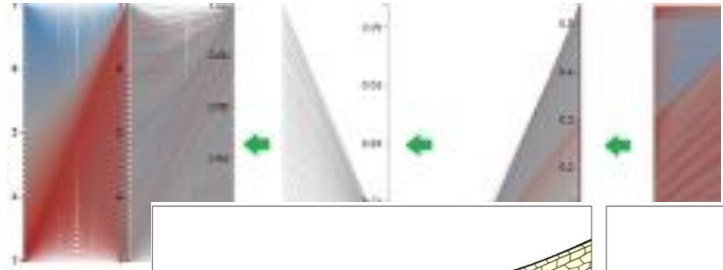
Thomas Wischgoll

Motivation

- Visualization methods need to be developed and adapted to fit the domain expert's needs

- A lot of insight can be gained from applying visualization algorithms to different domains

- There are different issues with respect to trust

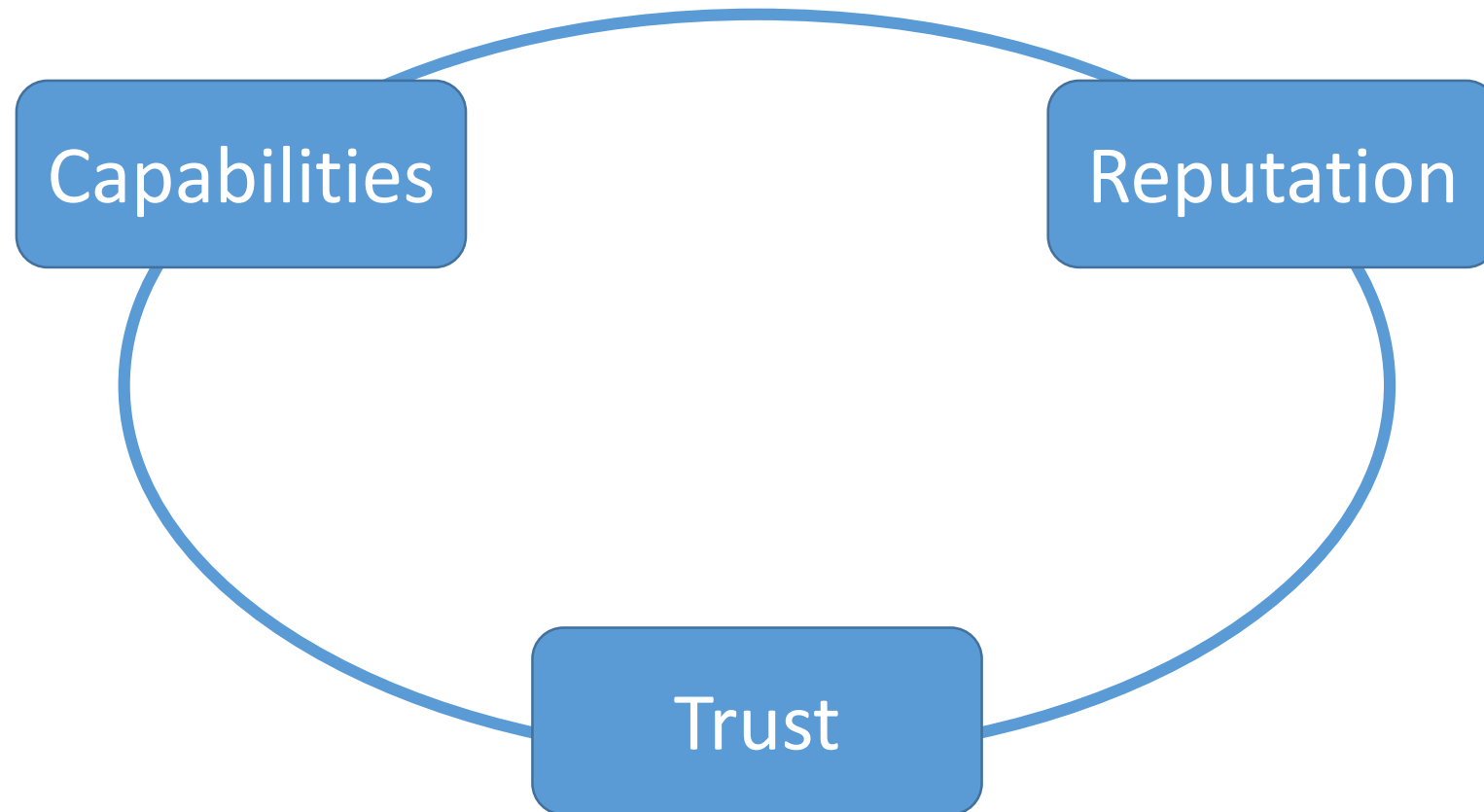- Disclaimer: I may use model, theory, best practices somewhat interchangeably

Examples

How to start Collaborative Visualization

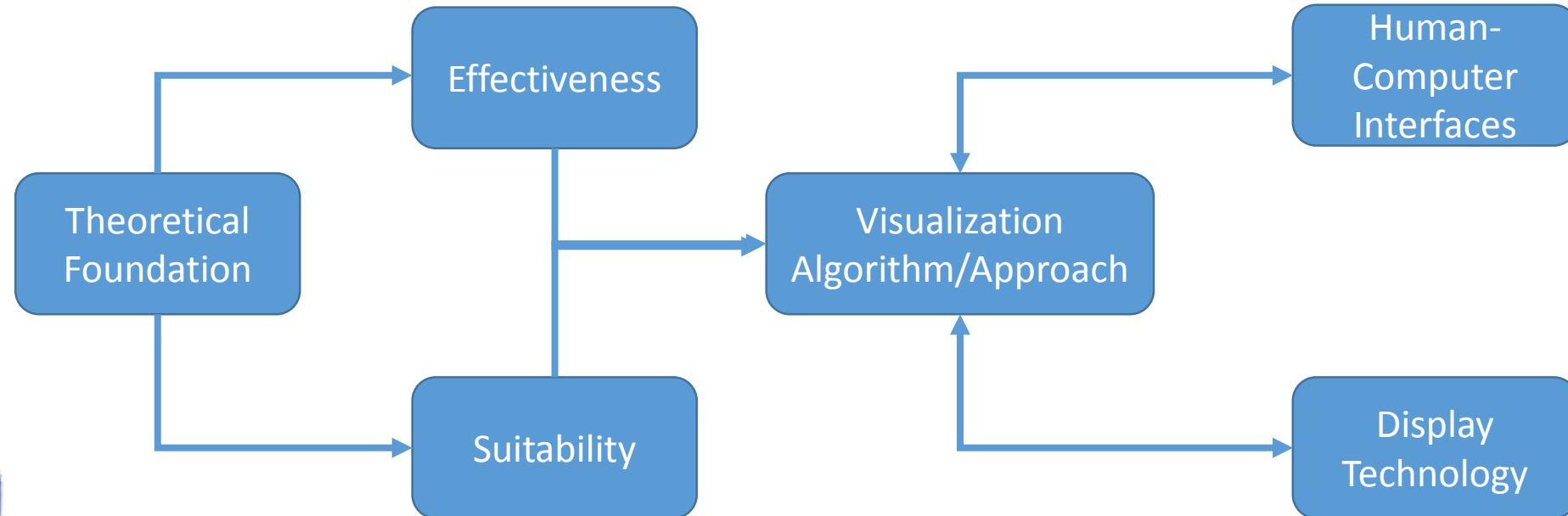How to start a collaborative visualization project?

Trust

- You will have to earn the domain expert's trust
- Medical experts have to deal with strict requirements:
  - HIPPA
- Working with DoD partners comes with additional restrictions:
  - export control
  - ITAR
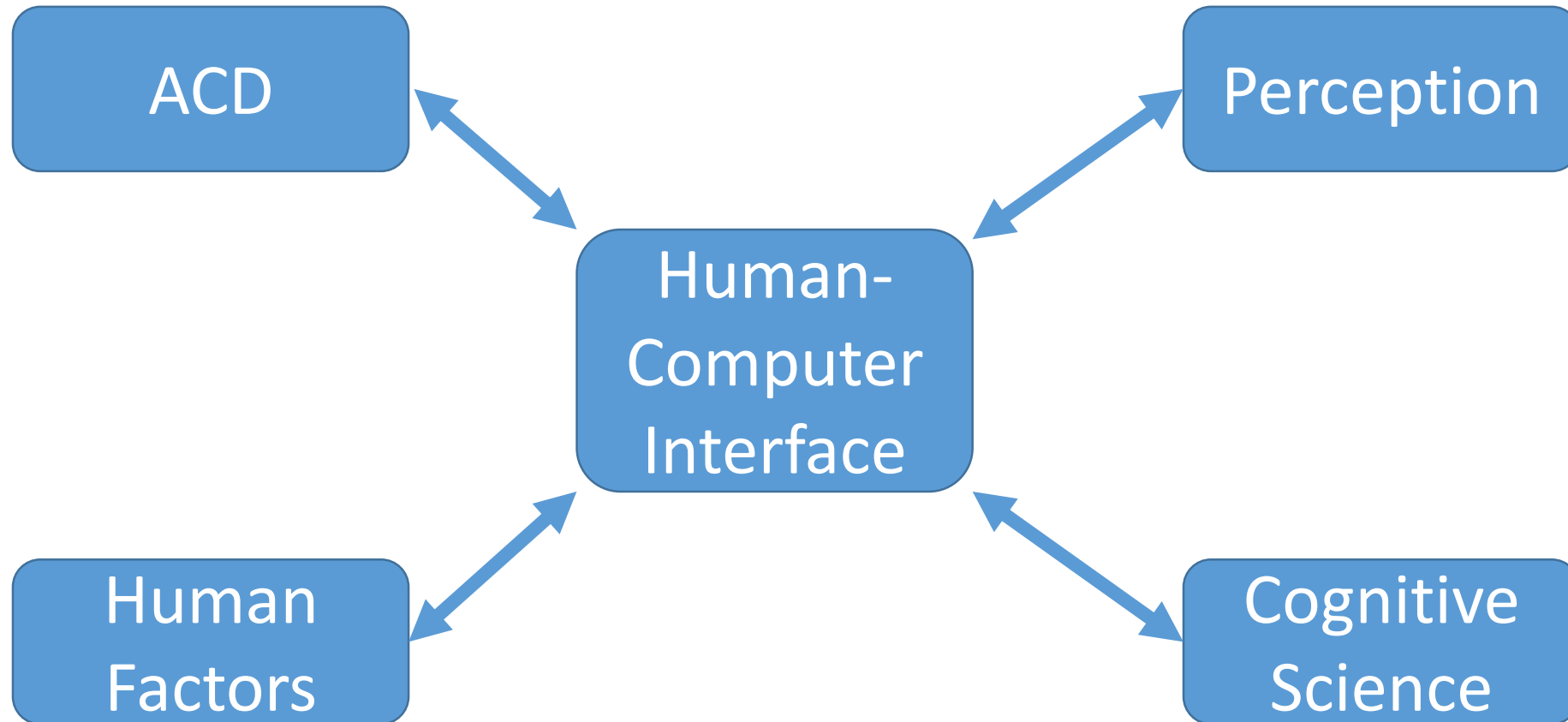- Data collection process may have been expensive or work intensive

Theoretical Foundation

Theoretical foundation is needed to answer some of the basic questions when applying visualization to specific applications
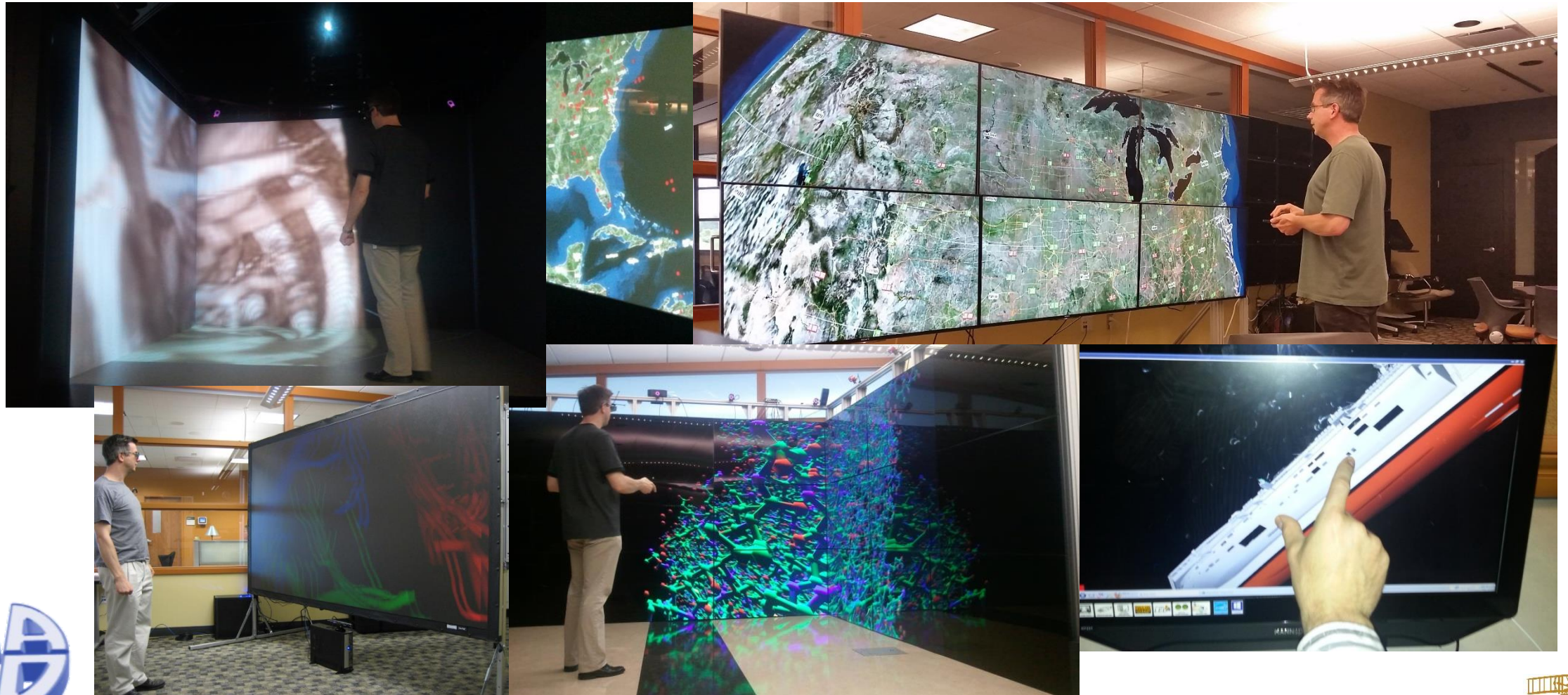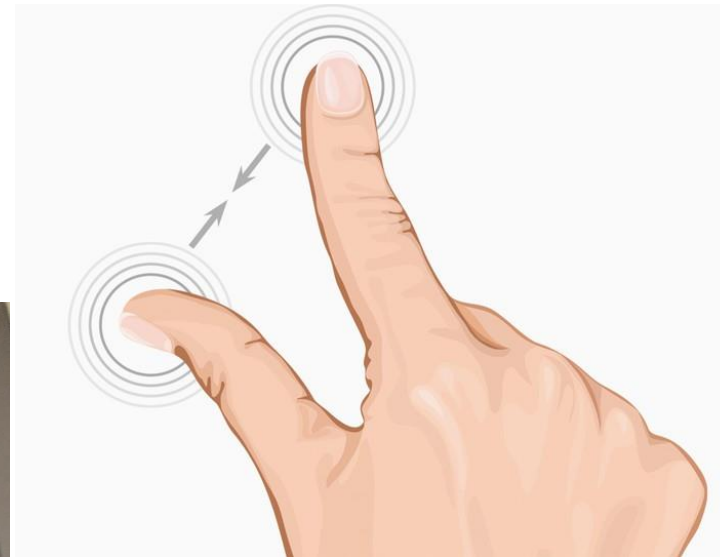
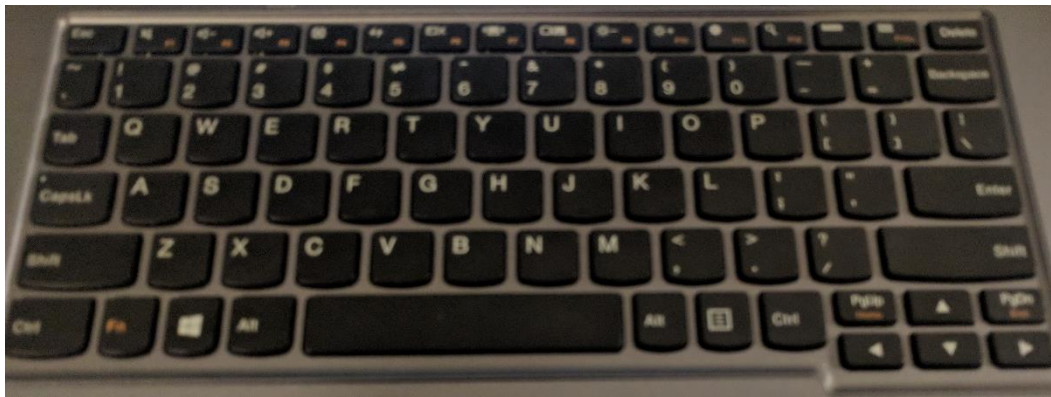But there is more...

User Interfaces

Study Perception and User Interfaces

User Interface

Terms like "easy to use" or "intuitive" are relative. They depend on

- Age group

- Cultural background

- Familiarity

Image courtesy of Andrew Savala

Trust

The domain specialist needs to be able to trust the visualization

- Way the visualization is derived

- Accuracy

- Uncertainty

- Avoid misleading representations
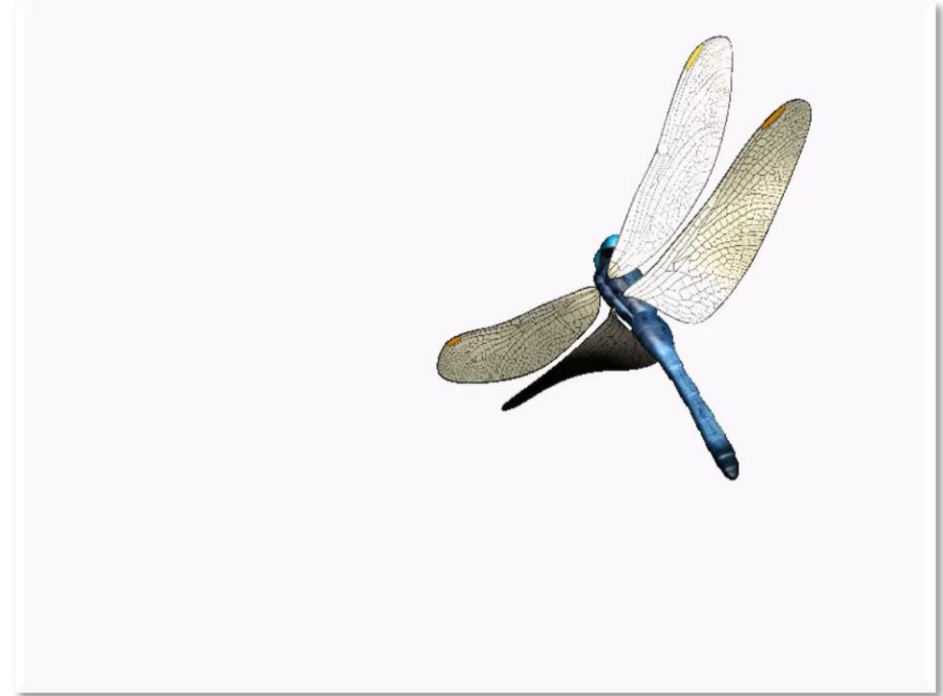
- …

Theoretical Foundation

Theoretical foundation for visualization needs to provide:

- Effectiveness of a visualization approach

- Suitability of a visualization approach

- Theoretical limitations of an approach

- Incorporated measures for uncertainty for increasing trust

- Accuracy of method

- Best human-computer interface for the task and target audience

Questions?

Thank you!

Thomas Wischgoll

Advanced Visual Data Analysis

Dept. of Computer Science and Engineering

Wright State University

thomas.wischgoll@wright.edu

avida.cs.wright.edu