RiSE Research in Software Engineering

Collaboration in Software Engineering

Ben Zorn

Co-manager, RiSE Group, Microsoft Research, Redmond

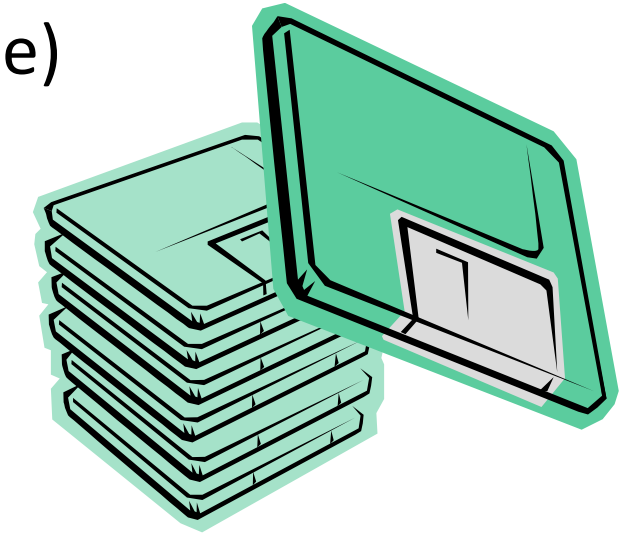
Who Needs Software Engineering? **Everyone**

- Historically, programmers…
- Now – anyone dealing with “reason” and “structure”’

- What is a program? A plan of action described precisely
- This kind of thinking is not limited to programmers
  - Excel users want to think about the data in their spreadsheets
  - Network engineers configure complex, dynamic networks
  - Biologists want to understand and manipulate cell behavior
  - Etc.

Software development is rapidly changing

- Programs are now distributed systems (client + service)
- Every developer is now dev/ops
- ~~Programs = Algorithms + Data Structures~~ **Wrong**
- Programs = Algorithms + Data Structures + **Data**
- Data is the lifeblood of modern programming
  - Our industry is transforming around getting data, manipulating data, understanding data, and making important business decisions based on it
- Big data / machine learning are essential components of modern software

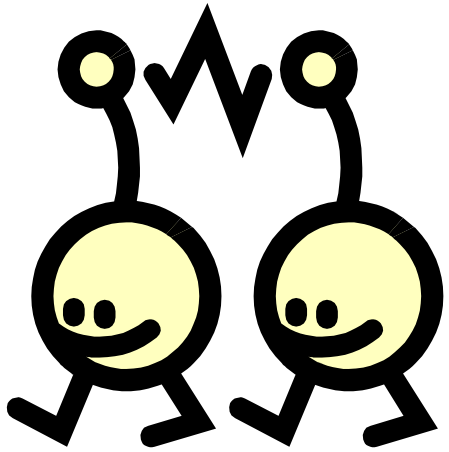


Collaboration and SEIF

- SEIF historically has been focused on expanding the boundaries of software engineering
- Changes in technology drive SE innovation
  - SEIF focus areas: Cloud, Internet of Things, Mobility, NUI
- The rich interaction between academia and industry drives deep research with high impact
- We have numerous examples of this interaction based on shared infrastructure such as Z3, TouchDevelop, Kinect, etc.

Impact through Collaboration and Sharing

- Highest impact work recognizes trends early and responds quickly
  - Industry has strong financial incentives to understand trends
  - Academics often look over the horizon,
- Increasingly, impact requires infrastructure
  - Lots of data, machines, customers
- Partnerships between industry and academia benefit both



In the face of disruptive change, the future belongs to companies and academics who embrace cooperation