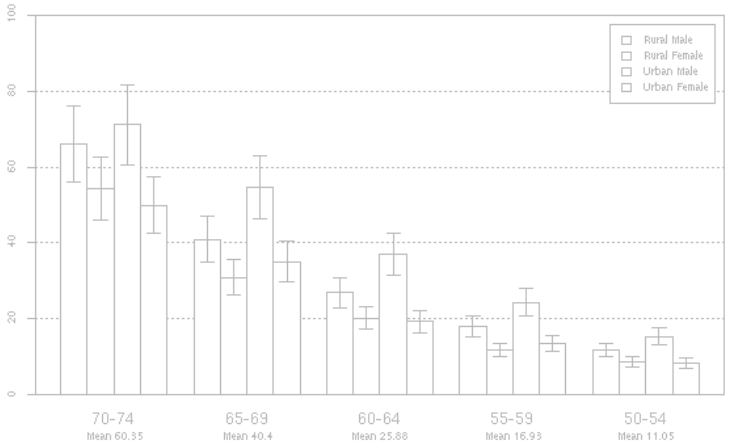
REVOLUTION ANALYTICS

Designing a Flexible GUI for R

UseR! The R User Conference 2010



Sheri Gilley, Principal UI Designer

July 2010

Introduction

- Sheri Gilley, Principal User Interface Designer
- BS in Psychology, Statistics
- MS in Statistics
- 25 years of software experience at SPSS
  - Statistician
  - Techline & Training
  - UI Designer
    - SPSS for Windows
    - What If?, What If? Web
    - Clementine
    - Text Analysis for Surveys, Text Analysis for Clementine
- Now Principal UI Designer at Revolution Analytics

GUI Design

- Design a user interface for R
- Easy to use
- Dialogs
- Menus
- Programming environment

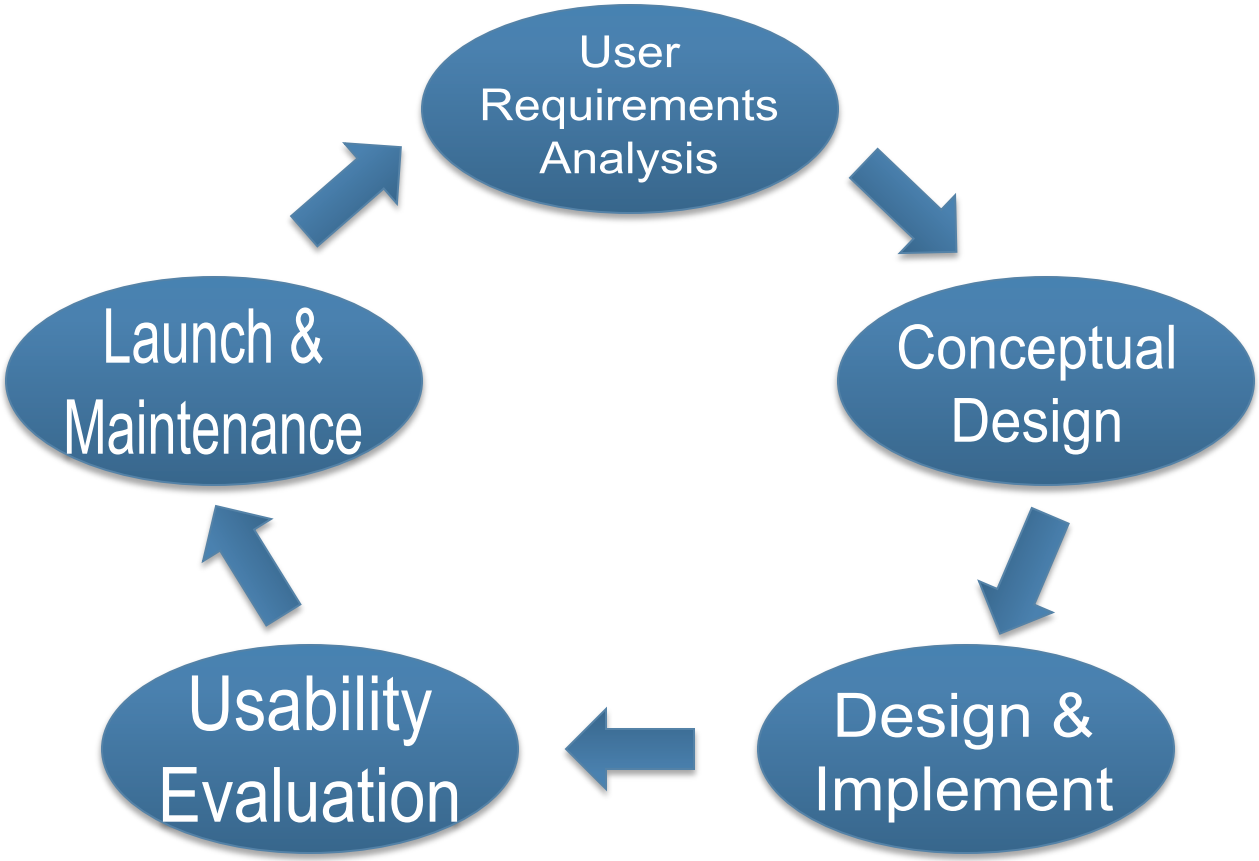
UCD

- User Centered Design
- Focus on user TASKS, user GOALS, user NEEDS
- Process incorporates user feedback and testing at every step.

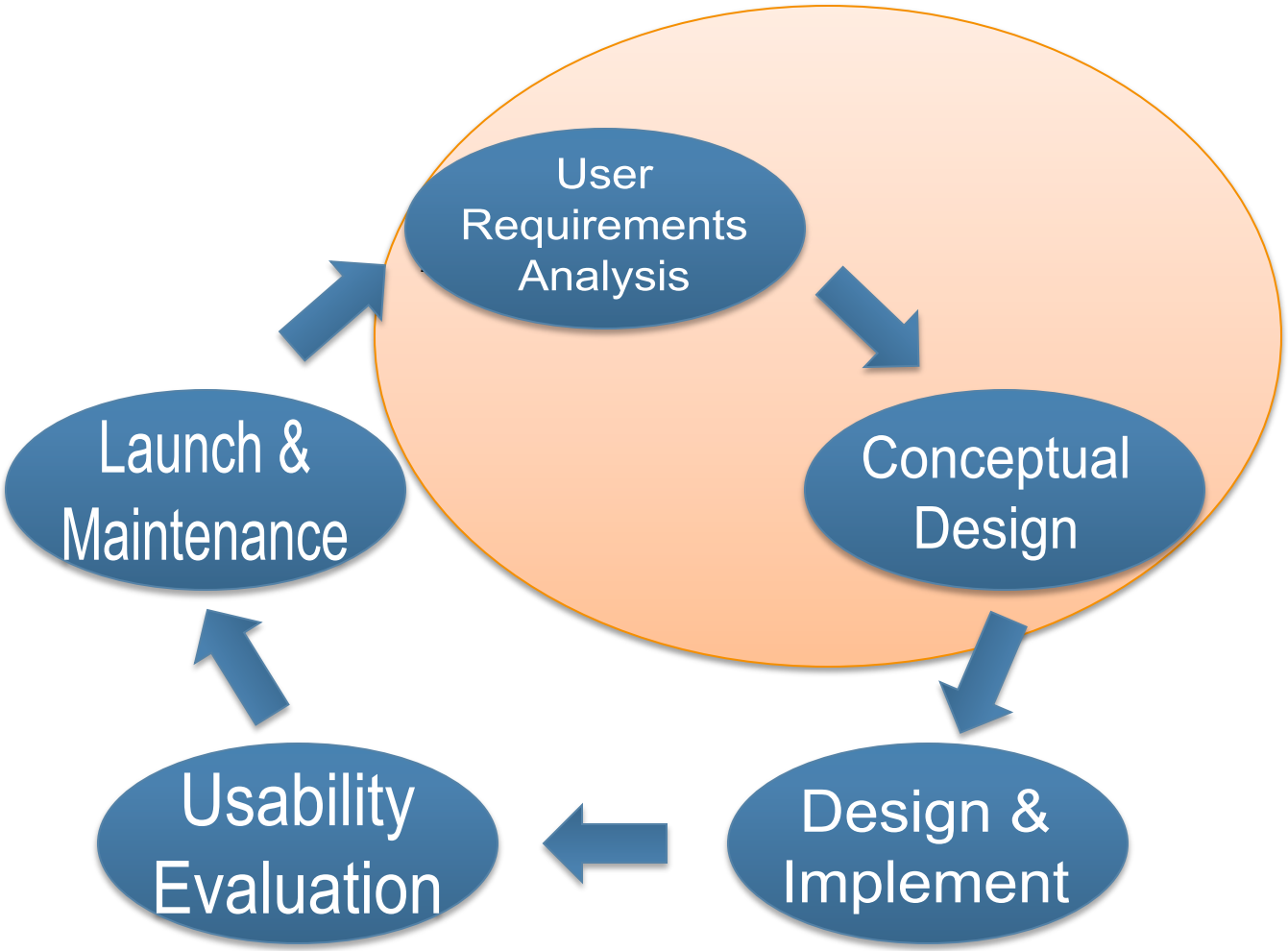
"Optimize the user interface around *how people can, want, or need to work*, rather than forcing the users to change how they work to accommodate the software developers' approach."

http://en.wikipedia.org/wiki/User-centered_design

UCD Phases


User Requirements Analysis
Conceptual Design
Design & Implement
Usability Evaluation
Launch & Maintenance

UCD Phases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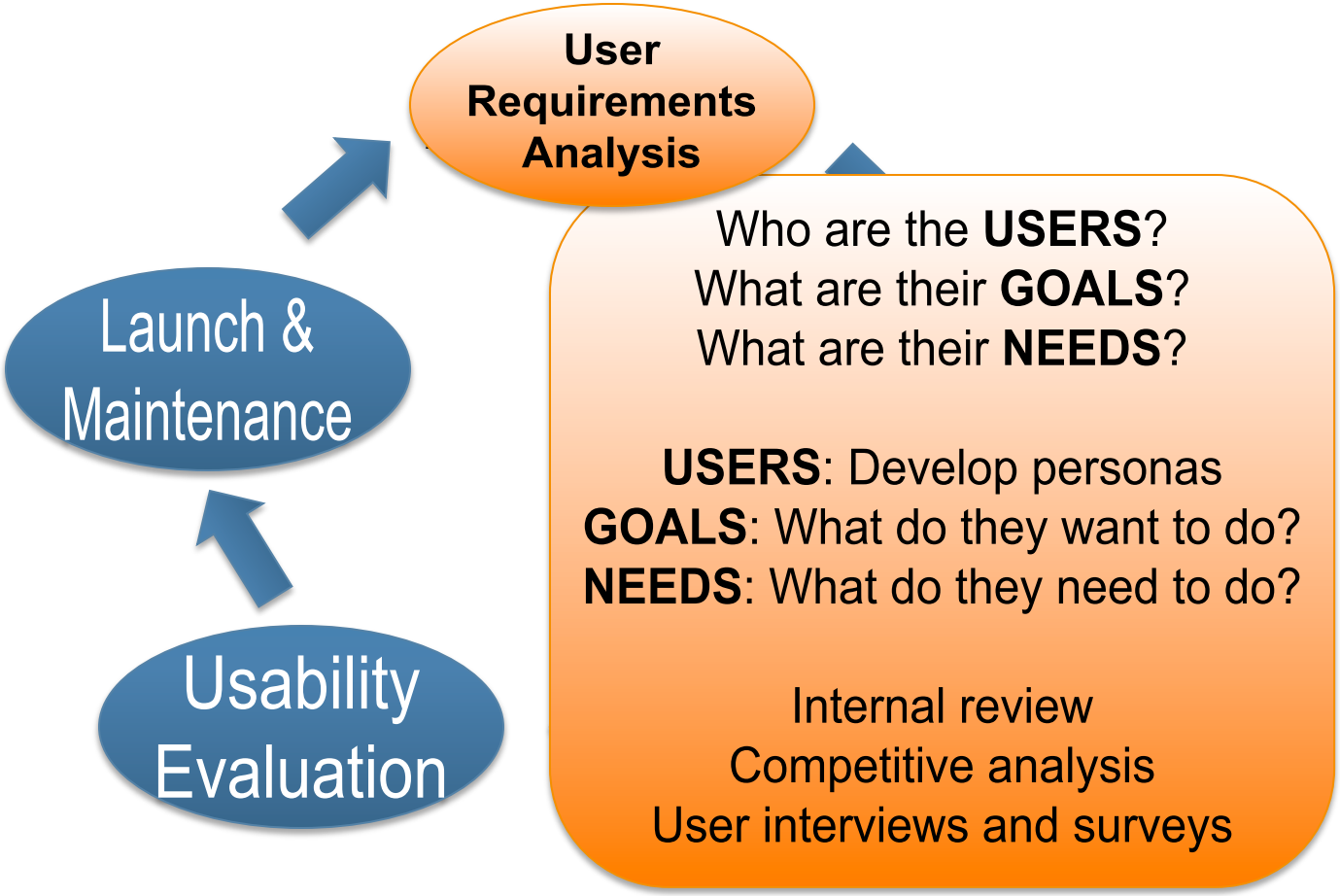
User Requirements



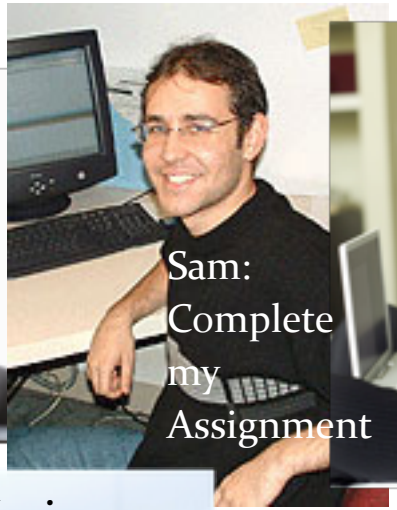
Personas

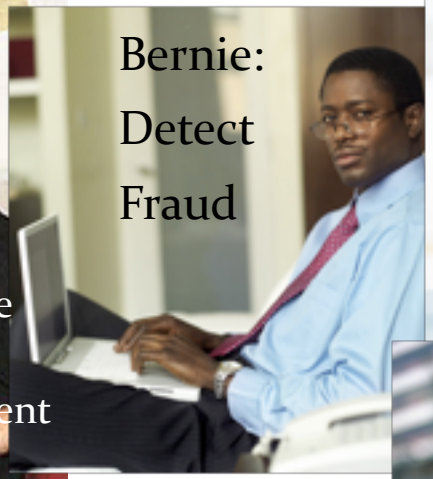
"Know thy user, for he is not yourself"

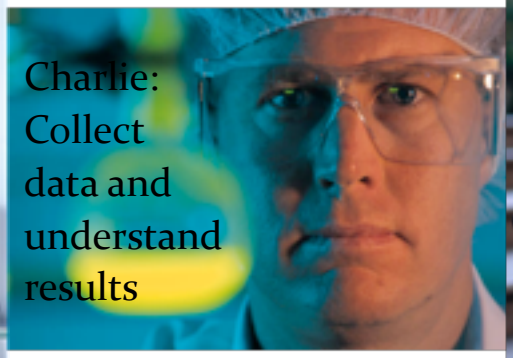
User Requirements Analysis

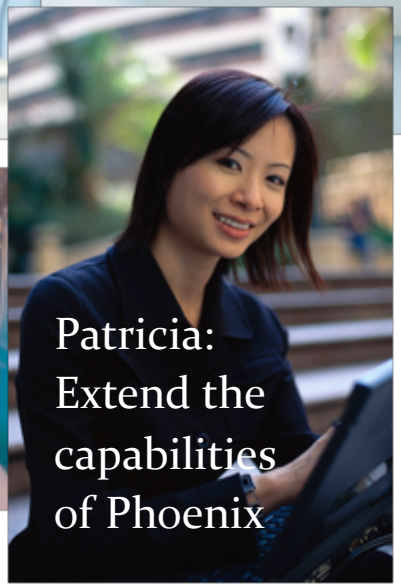
User GOALS

User Requirements Analysis

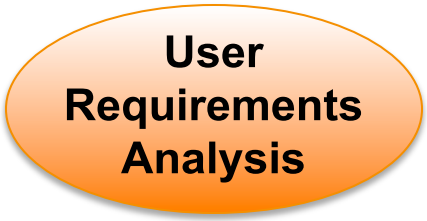








User NEEDS

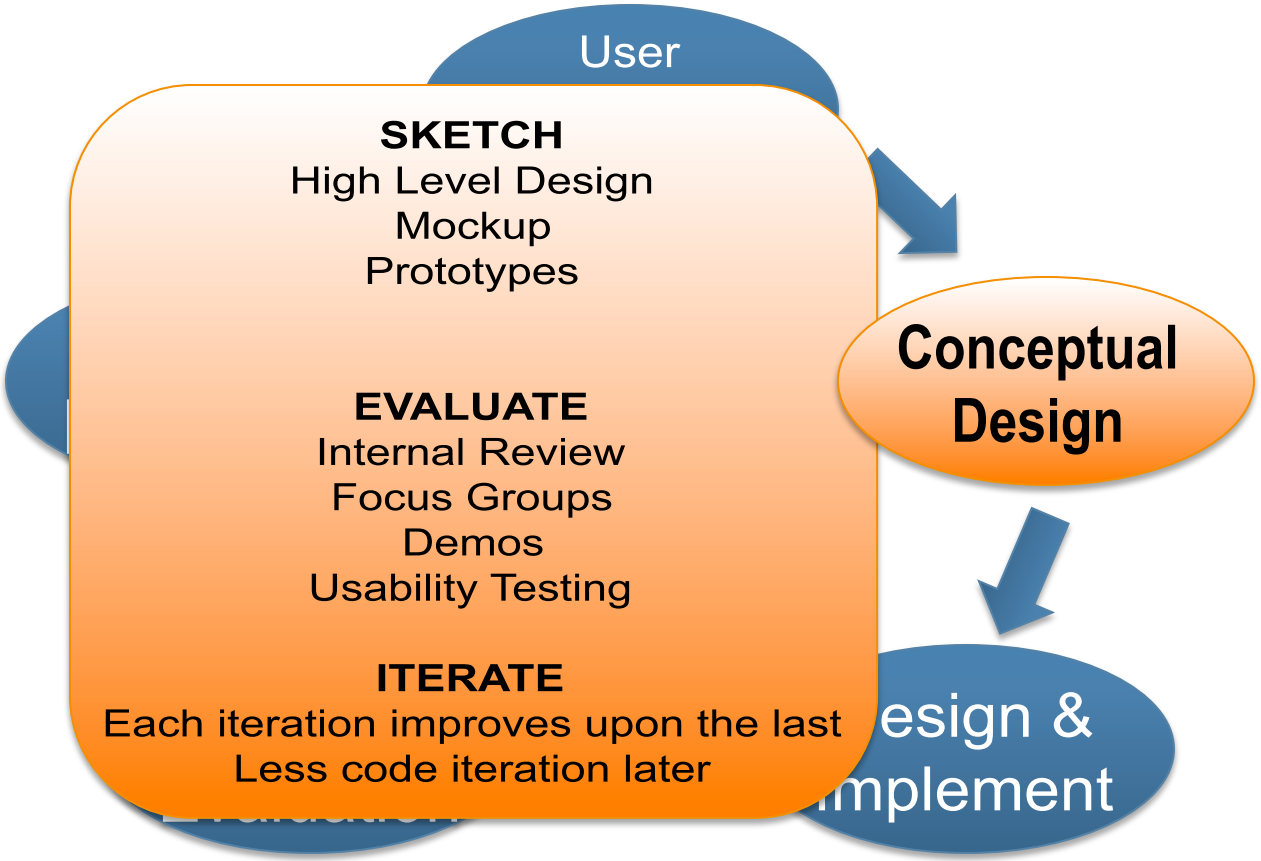


Product Goal : Provide a user experience that will broaden the use of R in the general data analytics market

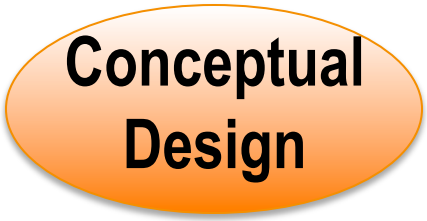
Needs: Fundamental UI design principles to be followed to achieve the goal

- Support the entire **workflow** of data analysis
- Easy to **move seamlessly** between the GUI and R Language
- Make it **easy to use** for a person who does not want to program in R
- **Aid in learning** for a beginner in R programming
- **Easy to extend** for someone who is an experienced R programmer
- **Cross platform**

Conceptual Design



Prototype



Many iterations of a prototype based on feedback from:

- **Internal demos**
- **1-1 demos to members of User Advisory Board**
- **Focus Group I – experienced R users/teachers**
- **Focus Group II – students new to R**

References

- http://www.upassoc.org/usability_resources/about_usability/what_is_ucd.html
- http://www.w3.org/WAI/redesign/ucd
- http://en.wikipedia.org/wiki/User-centered_design

- Norman, Donald A. (1988): *The Design of Everyday Things.* New York, Doubleday
- Cooper, Alan. (1999): *The Inmates are Running the Asylum.* SAMS

User Advisory Board

- Revolution's User Advisory Board
  - 1-1 demos
  - specific questions about a design
  - survey of feature desirability
  - early information about beta program
- How to join?
  - see me after this talk
  - email me: sheri@revolutionanalytics.com

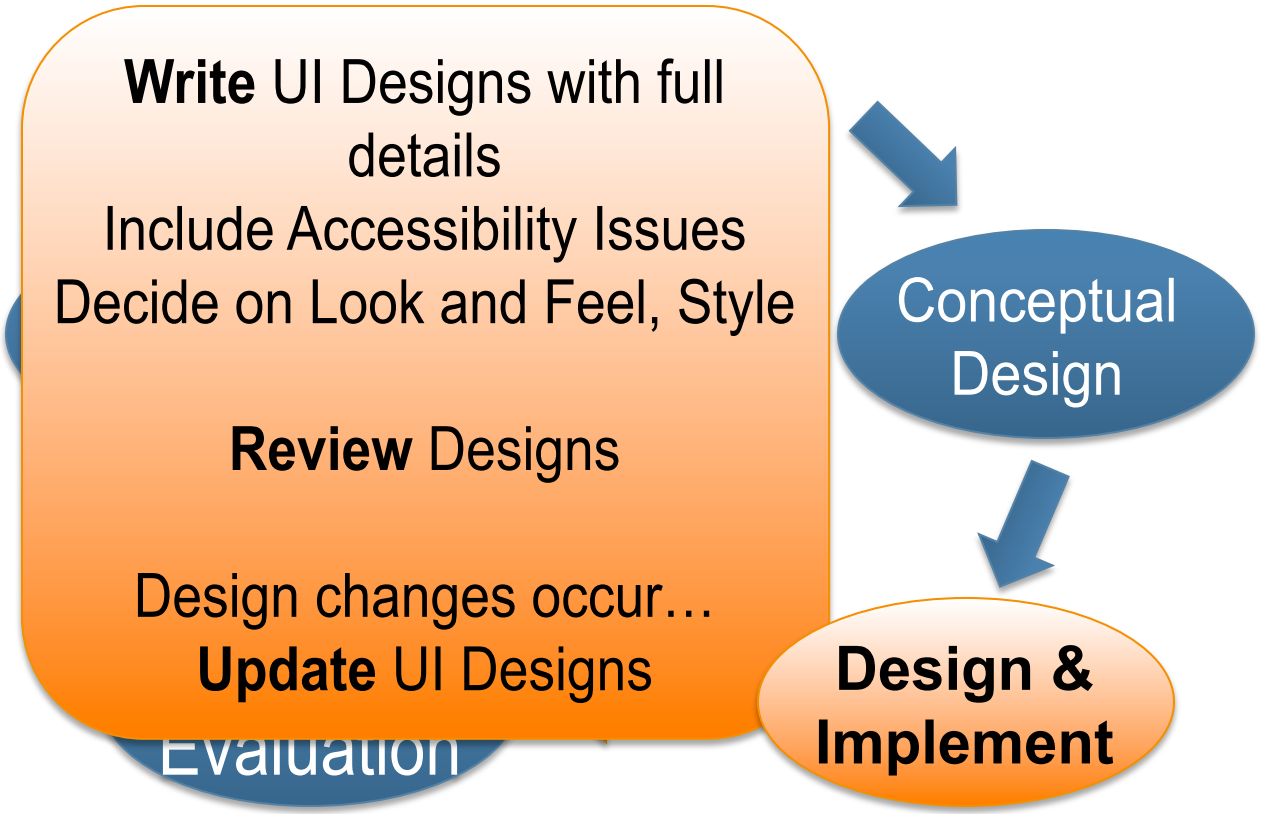
DEMO

- Prototype Demo
- Images from Fireworks
  - Webpage from Dreamweaver, simple click events
  - Easy to iterate quickly, just draw a different picture
- Actual client development and UI designs are underway in parallel

Appendix

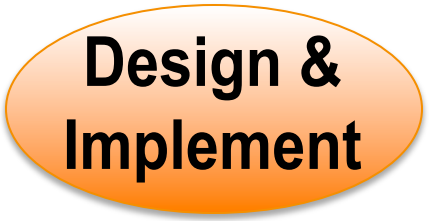
- The following slides show UCD activities involved in other phases of development. They will not be covered in the conference talk.

Appendix



Design & Implement

Appendix



- Focus on user **task**, not on R code
- Reveal underlying code rather than design for it

Design

- More complex designs may be simpler for user

- What does the user **want**?
- **Why** does the user want it?
- What is the user going to **do with it**?

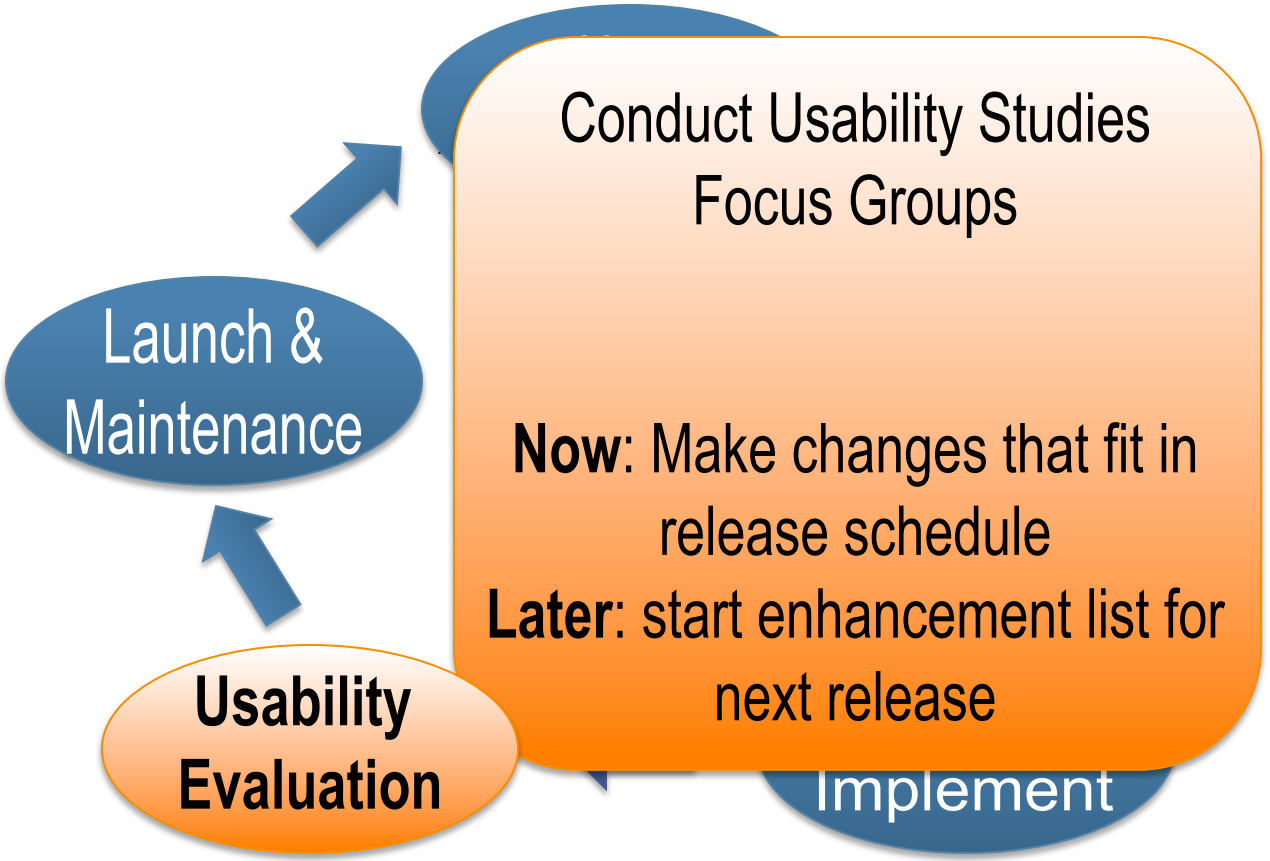
Appendix

Design & Implement

- High level view of product
- How rich is the UI?
  - Drag & Drop?
  - Accessibility?
- How extensible?
  - What can the user extend?
  - What can a developer extend?
- What platforms?
- Thin client or desktop?
- Cloud or corporate intranet?
- What common components are there?

Implement

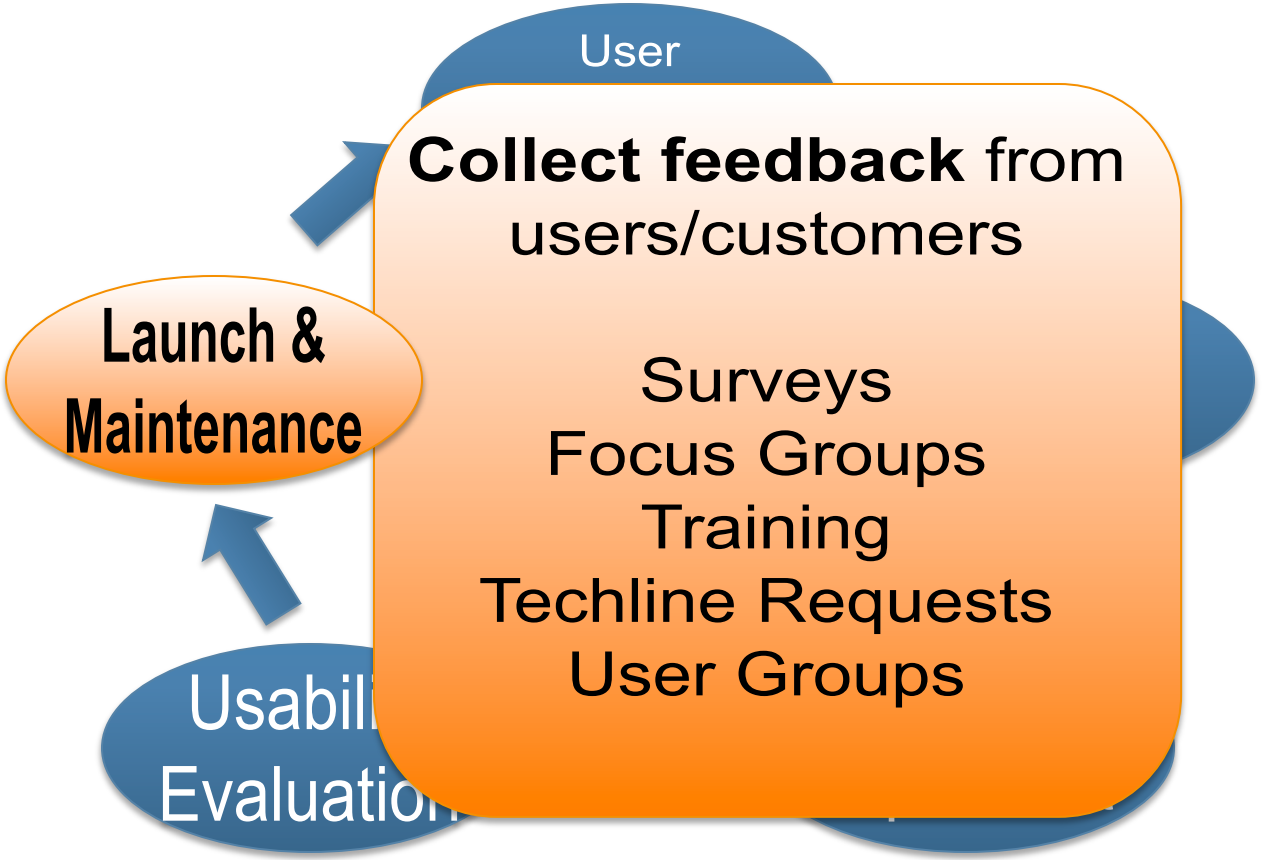
Appendix


Conduct Usability Studies
Focus Groups
Now: Make changes that fit in release schedule
Later: start enhancement list for next release
Implement
Usability Evaluation
Launch & Maintenance

Appendix

- Usability lab
- Online meeting software
  - cheaper
  - easy access for subjects
  - but not as hands-off as a lab

Designing a Flexible GUI for R



Launch & Maintenance