

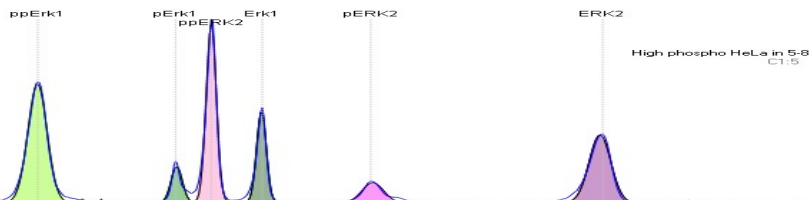
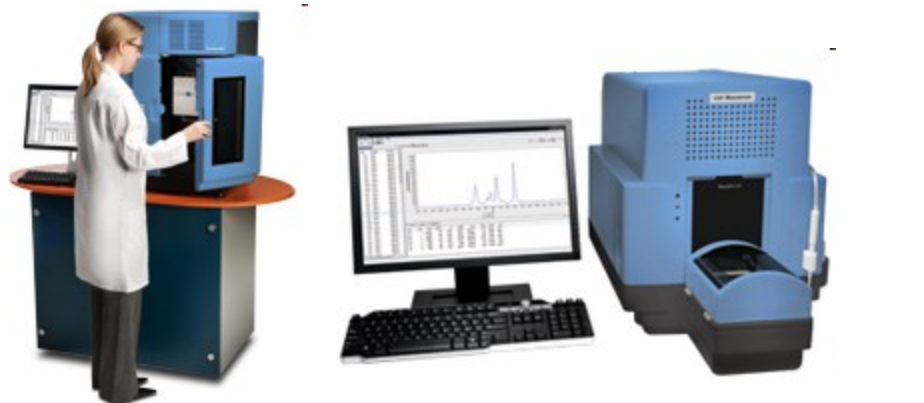
## How Cell Biosciences uses Eclipse

Daniel Coupal  
Ken Swartz Ph.D.

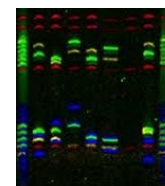
[[dcoupal at universia.com](mailto:dcoupal@universia.com)]  
[[kswartz at cellbiosciences.com](mailto:kswartz@cellbiosciences.com)]

## Instruments for studying proteins (Cancer Research)

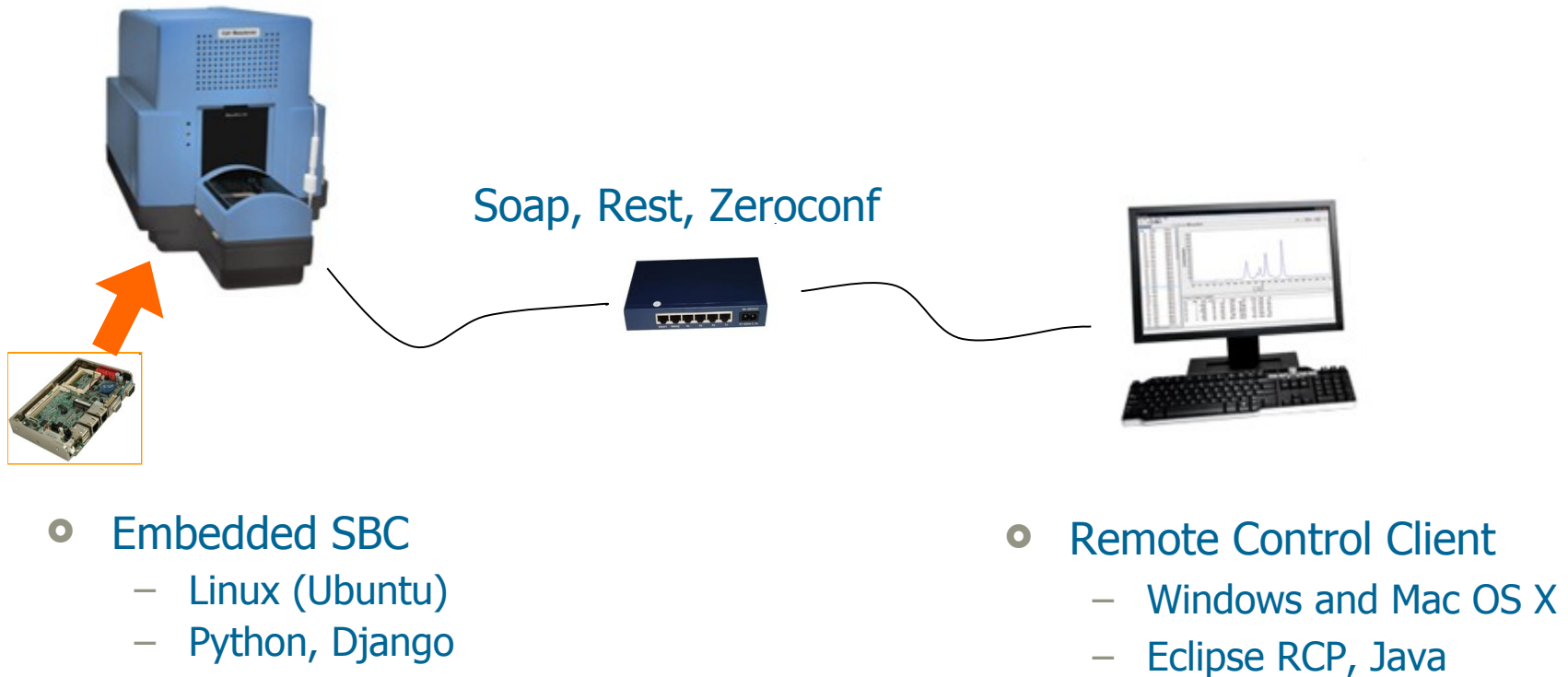
### Protein separation by pH



### Gel Imaging

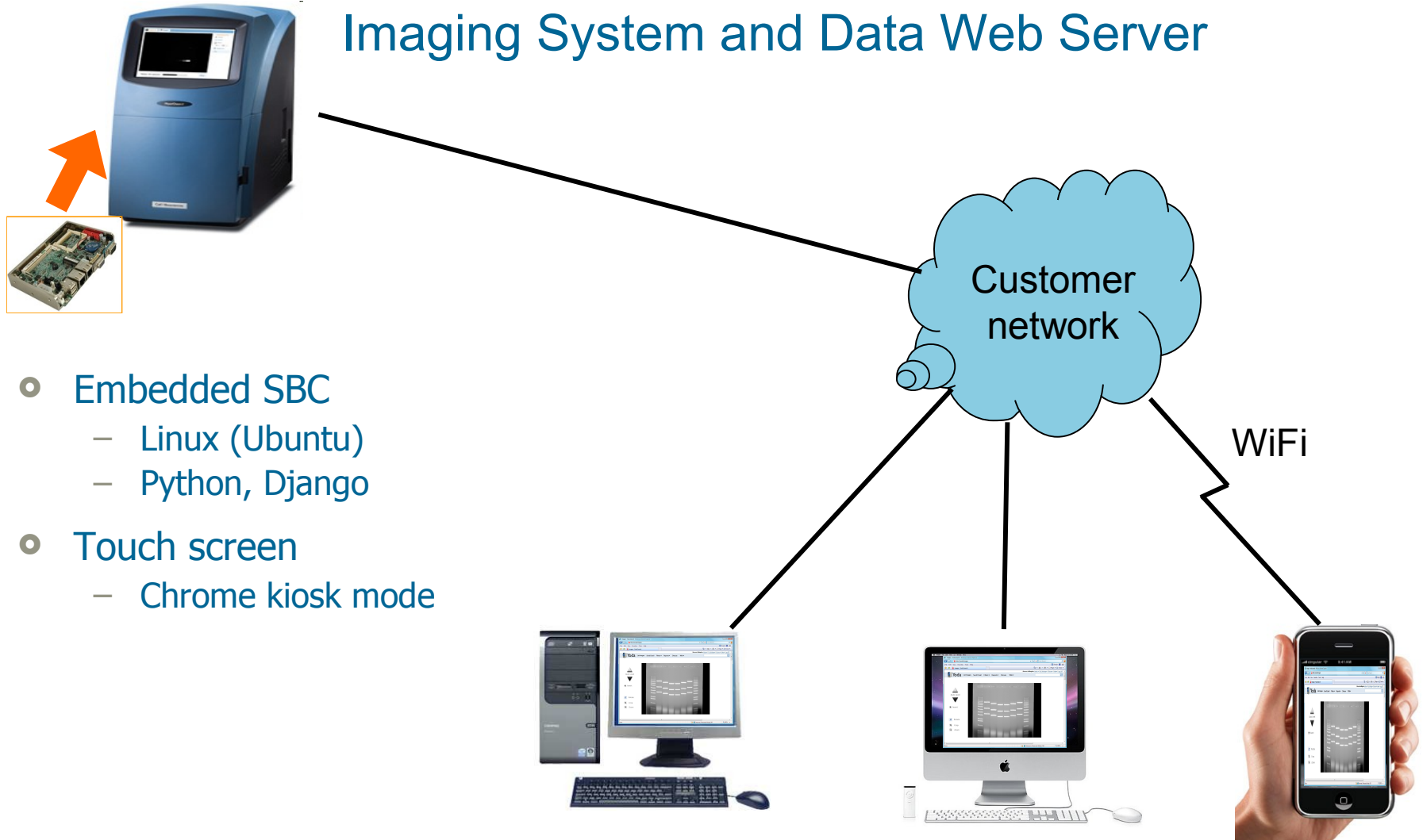


## Robotics and Imaging System



# Architecture for an Appliance Instrument

## Imaging System and Data Web Server



## Who we are:

Company: ~100 employees

Software Group: ~6 people

- 1 manager, (UI design)
- 2 engineers (Java, Python, JavaScript)
- 1 engineer (legacy .NET)
- 1 contractor (coding and ...builds, tests, installers, tools.)
- 1 SQA person



# Software development at a small company

- Not many resources
  - Everyone does many tasks
  - Little time to learn
  - Tasks should add immediate value
- Use known tools where one can
  - Need to use a specialized tool for a week

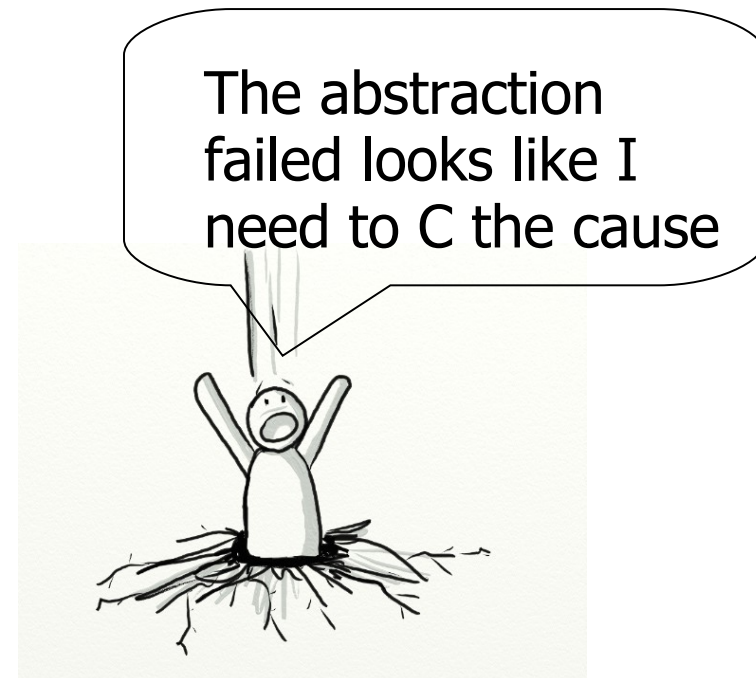


## Our software tool needs

# Instruments usually require diverse technologies.

- Embedded Computers
  - Linux, Python, Django, (C++ for drivers)
- Desktop applications
  - Windows, Mac OS X, Java (Eclipse RCP)

On a good day one can work on Java,  
Python and JavaScript  
...on a bad day, it includes C++



## Eclipse IDE for small teams and diverse products

## Use one IDE across many technologies

**OS**

Linux



Windows



Mac OS X



Eclipse

**Language**

Great=Java.refactor()

[Python for debug in code]

Aptana=JavaScript.plugin

&lt;HTML/&gt;

C++-=

*Don't need to move the F3 key!!!*



## Eclipse plugins we use

- Eclipse for RCP Developers, version 3.5
- PyDev
- Subclipse
- EGit
- JUnit
- SWT Bot
- TPTP Test and Performance
- SOAP WSDL editing
- Aptana



- Easy to publish our Eclipse environment
  - Install Eclipse
  - Install all plug-ins
  - Zip it!
  - Push to server
- Easy to install for all engineers
  - unzip
- The coolest...
  - A breeze to install on any lab machine to debug
  - Install remotely with a USB key



# Eclipse RCP for scientific applications

## RCP: Using the framework of Eclipse for something entirely different

- Cross platform desktop application for Windows and Mac OS X
  - Native looking application
- Leverage existing Framework
  - Perspectives map to different steps in data acquisition and analysis
- Did I mention cross platform?
  - We have to support ubiquitous Windows
  - There are many users in academia who love their Macs

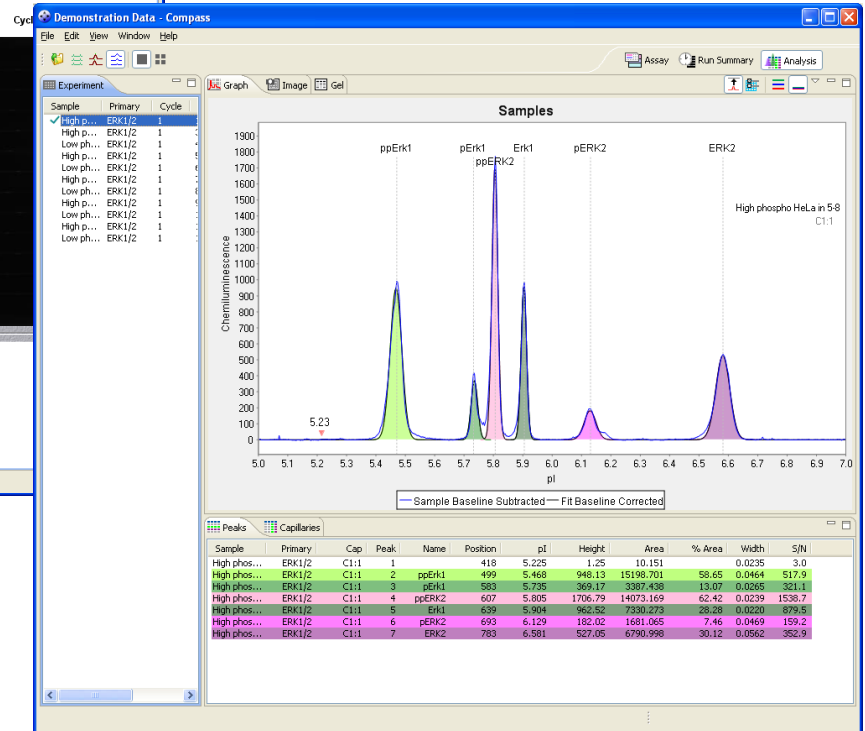
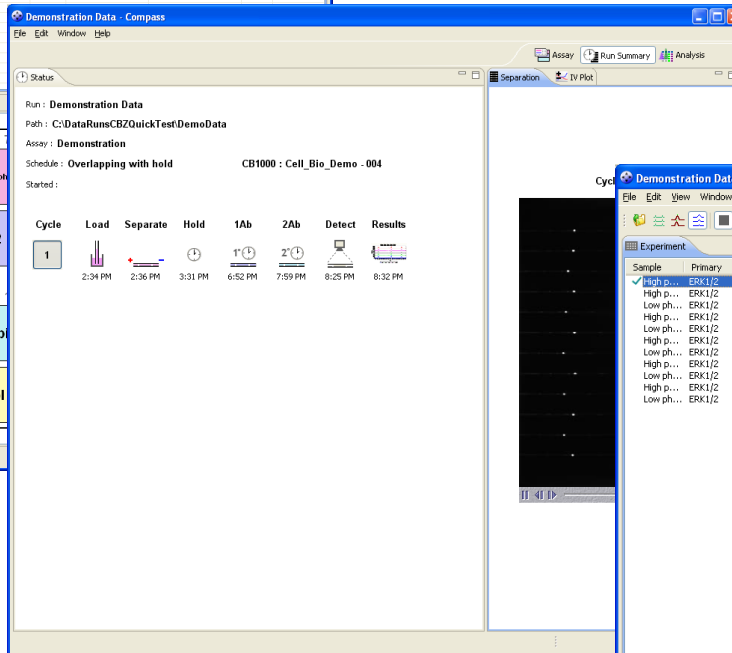
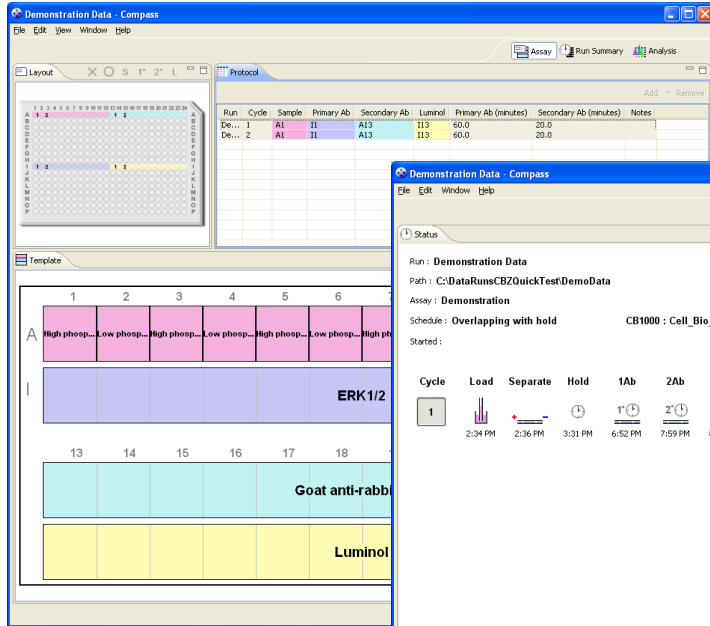


# Compass: an Eclipse RCP

- Graphs
- Images
- Different data slices
- Colored coded data features



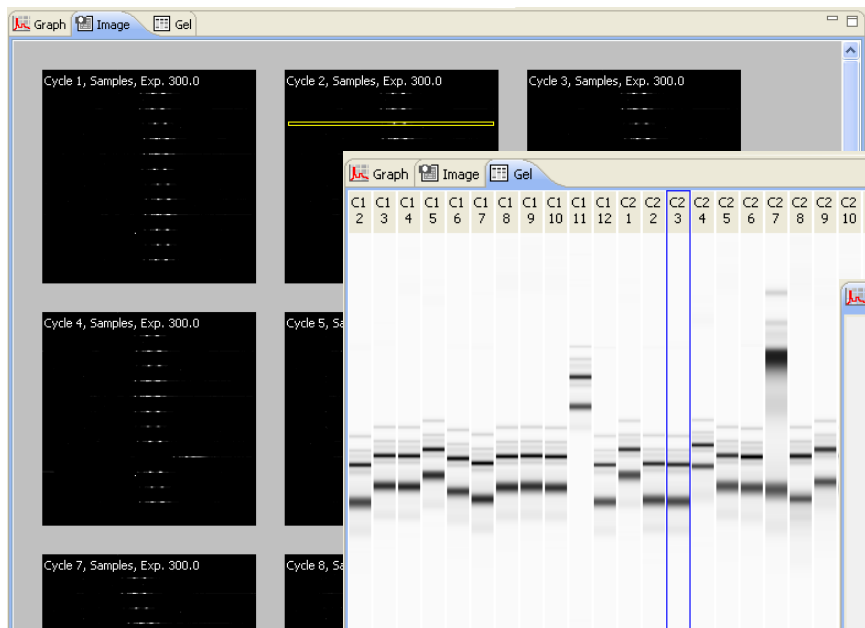
# Application Perspectives -> Experiment Stages



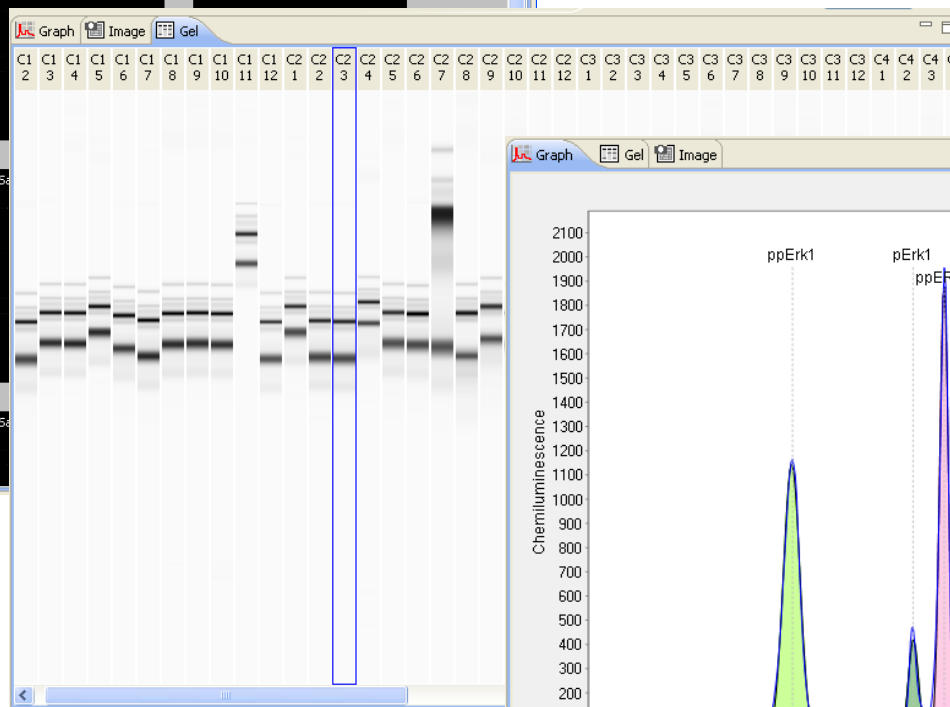
Setup

Data Run Progress

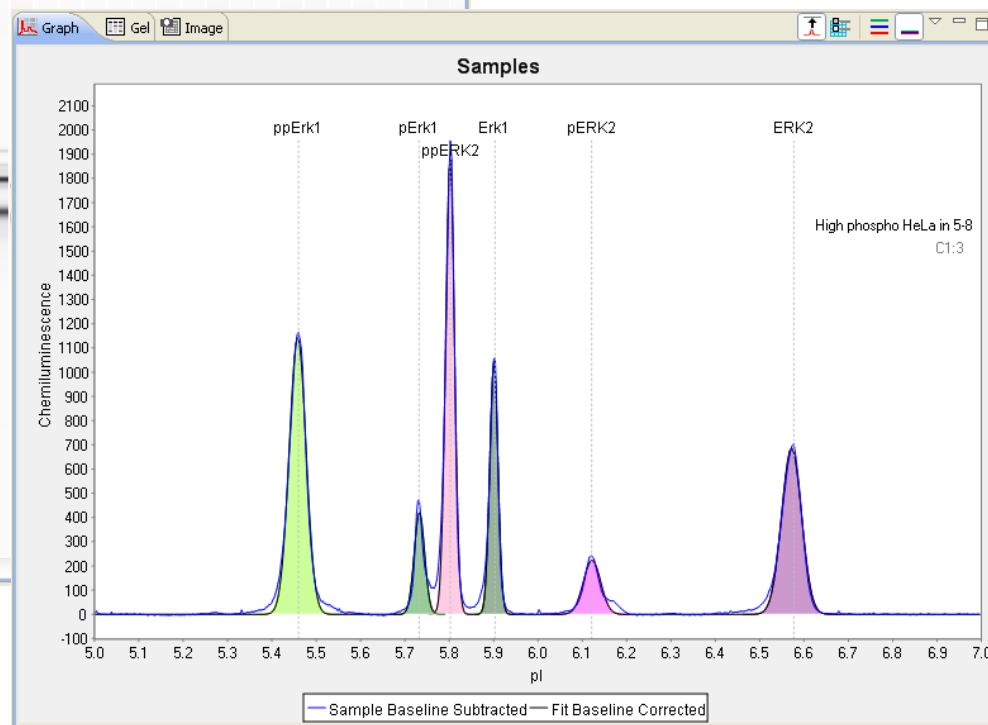
Analyze Data



Images



Pseudo Gel



Graph (JFreeChart)

# Where Eclipse RCP could do better

- Builds
  - Used PDE when we started, works OK
  - Currently many solutions available: PDE, Athena, Buckminster, B2
  - Not able to investigate them all
- Updates
  - Use basic updates
  - Tried an early version of P2, did not succeed
- Installers
  - Require complete installation: shortcuts, dependencies, ...
  - Use 3<sup>rd</sup> party tool: Advanced Installer



## Other tools we use

- We use hosted services where we can
  - Fogbuz, defect tracking, project management
  - Wush.net (SVN hosting)
- Firebug (JavaScript debugging)
- bpython, great Python shell
  - Can have your ssh and auto-completion too.

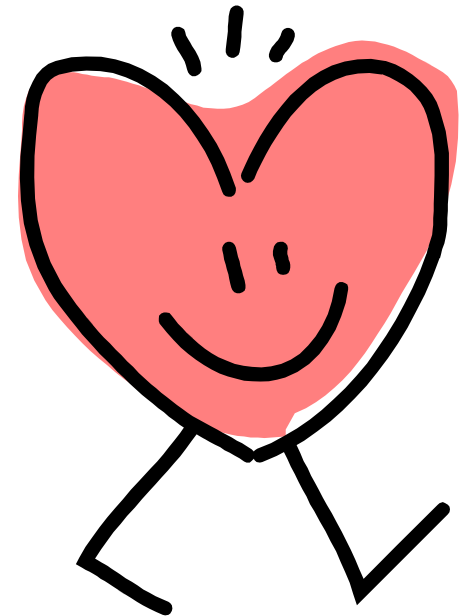


**In the Cloud,**  
if it rains, will our  
bugs float or get  
squashed?



## Things we love about Eclipse

- ◉ Low entry cost, in time and money, to try new technologies
- ◉ Framework to leverage for our UI
- ◉ Easy to deploy
- ◉ Fast refactoring of Java Code
- ◉ Debugging of Python



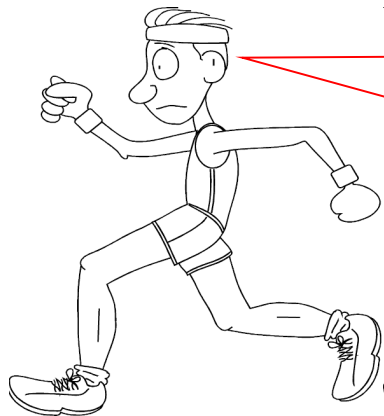
## Eclipse works well for our a small group

- Great when using diverse technologies
  - One IDE for multiple platforms and languages
  - Easy to reproduce development environment
- RCP is well suited for desktop scientific applications
  - Leverage Framework for UI
  - RCP application installer and build system are hurdles



# Shameless advertisement (Job Opening)

- Software Engineer for our new imaging product line
  - Like working in a small team wearing many hats.
  - Eclipse
  - Python, Java, JavaScript, Django
  - Real time/Instrument control
  - Being a runner is a plus (some of us run at lunch)



```
for ( i=0; i<distance; i++ ) {  
    left += step;  
    right += step;  
}
```

I need an Android app for this!

- Further questions
  - Ken Swartz  
kswartz at cellbiosciences.com
  - Daniel Coupal  
dcoupal at universia.com
  
- Job opening
  - Steve Gallagher  
sgallagher at cellbiosciences.com



**Thank you for all the great work on Eclipse !!!**