A Bit of Rigor Goes a Long Way

Making Small Changes to Software Process for Large Gains

Joe Kiniry

Systems Research Group
School of Computer Science and Informatics
University College Dublin

Software Developers in a Nutshell

- must chase a very dynamic discipline

- dislike changing how they work

- love to code, but hate to document

- use the same set of tools that they became comfortable with when they "matured"

- understanding of the field mutates and evolves over time, but sometimes stalls

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   2
April, 2008

Populist Trends in Software Engineering

concept	key tech
OO	C++
CORBA	Iona
UML	Grady
aspects	AspectJ
unit testing	jUnit
XP	Ward & Kent
SOAs	IBM & BEA

Systems Research Group
School of Computer Science and Informatics
University College Dublin
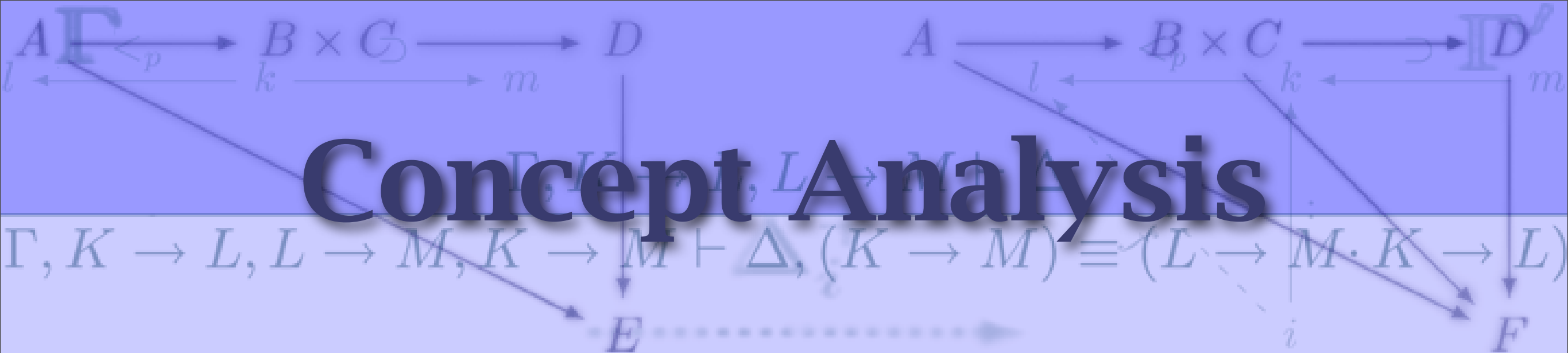
CASL/TRIL TTP Research Day
CASL, UCD   3
April, 2008

Hypocrisy in Software Engineering

- Meyer's OOSC sits on many of our shelves
  - and yet very few programmers have read it
- we spend $10Ks on tools from Rational
  - and yet design rarely happens and our architectures have no documentation
- everyone talks about unit testing
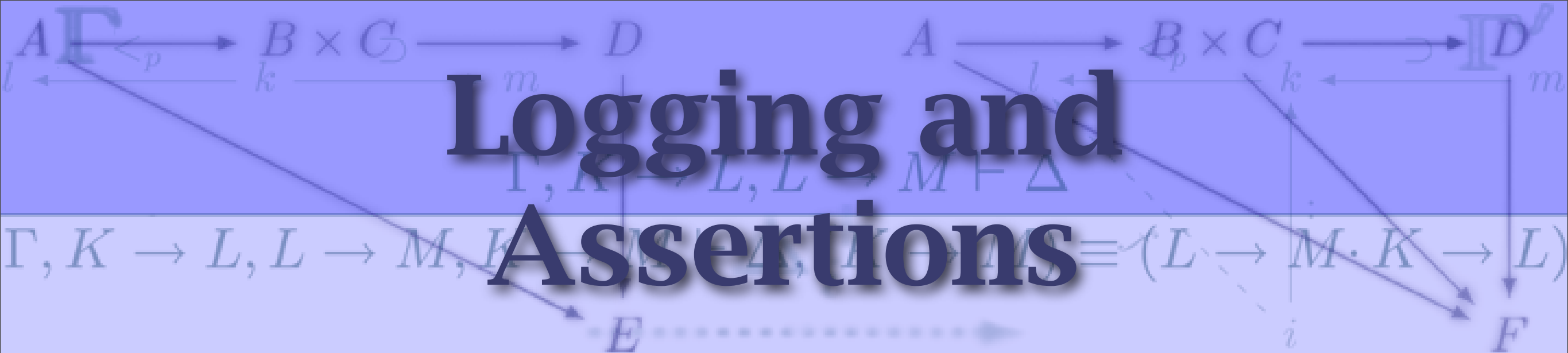 - but very little software ships with tests

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   4
April, 2008

Improving Quality

- perform concept and domain analysis

- understand the continuum between logging and assertions

- carefully document public interfaces

- always find a way to reuse work

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   5
April, 2008

Concept Analysis

Systems Research Group

School of Computer Science and Informatics

University College Dublin

CASL/TRIL TTP Research Day

CASL, UCD 6

April, 2008

Logging and Assertions

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   7
April, 2008

Carefully Document Public Interfaces

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   8
April, 2008

Always Find a Way to Reuse Work

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   9
April, 2008

Concrete Suggestions

- BONc

- JavaDoc

- CheckStyle

- PMD and FindBugs

- Metrics

- JML and ESC/Java2

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   10
April, 2008

More Information

- Mobius Program Verification Environment
  - http://mobius.ucd.ie/
- the JML Tool Suite
  - http://www.jmlspecs.org/
- ESC/Java2, BONc, and other tools
  - http://kind.ucd.ie/products/opensource/

Systems Research Group
School of Computer Science and Informatics
University College Dublin

CASL/TRIL TTP Research Day
CASL, UCD   11
April, 2008