

# Provenance and Product Lines COW

## Welcome

# Centre for Research on Evolution Search and Testing Est. 2006

1 admin

4 faculty

7 post docs

10 PhD students

1-4 resident visiting scholars

**CREST**



# Research

Service Oriented Computing

Search Based Software Engineering

Clone Detection

Dependence Analysis

Quantitative Information Flow

Requirement Engineering

Testing

Digital Humanities

# Funding



 Sherlock Holmes Museum  
 Madame Tussaud's

20 mins walk

 Marble Arch

 Eros

 **UCL**  
British Museum



 Covent Garden Market

 Royal Courts of Justice

 St. Paul's

 National Gallery

 Nelson's Column

 Tate Modern

 Globe Theatre

 Westminster Abbey

 House of Parliament  
London Eye

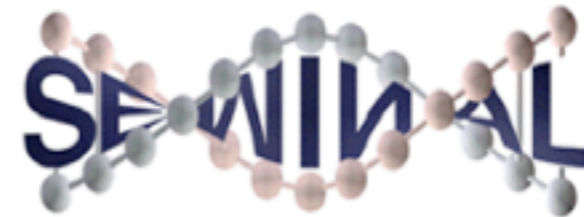


# Search Based Software Engineering

Apply **search techniques** to Software Engineering

## Multi objective optimisation:

- cost and value
- faults, coverage, time
- metric sets
- risk and reward



Centre for Research in  
Evolution, Search &

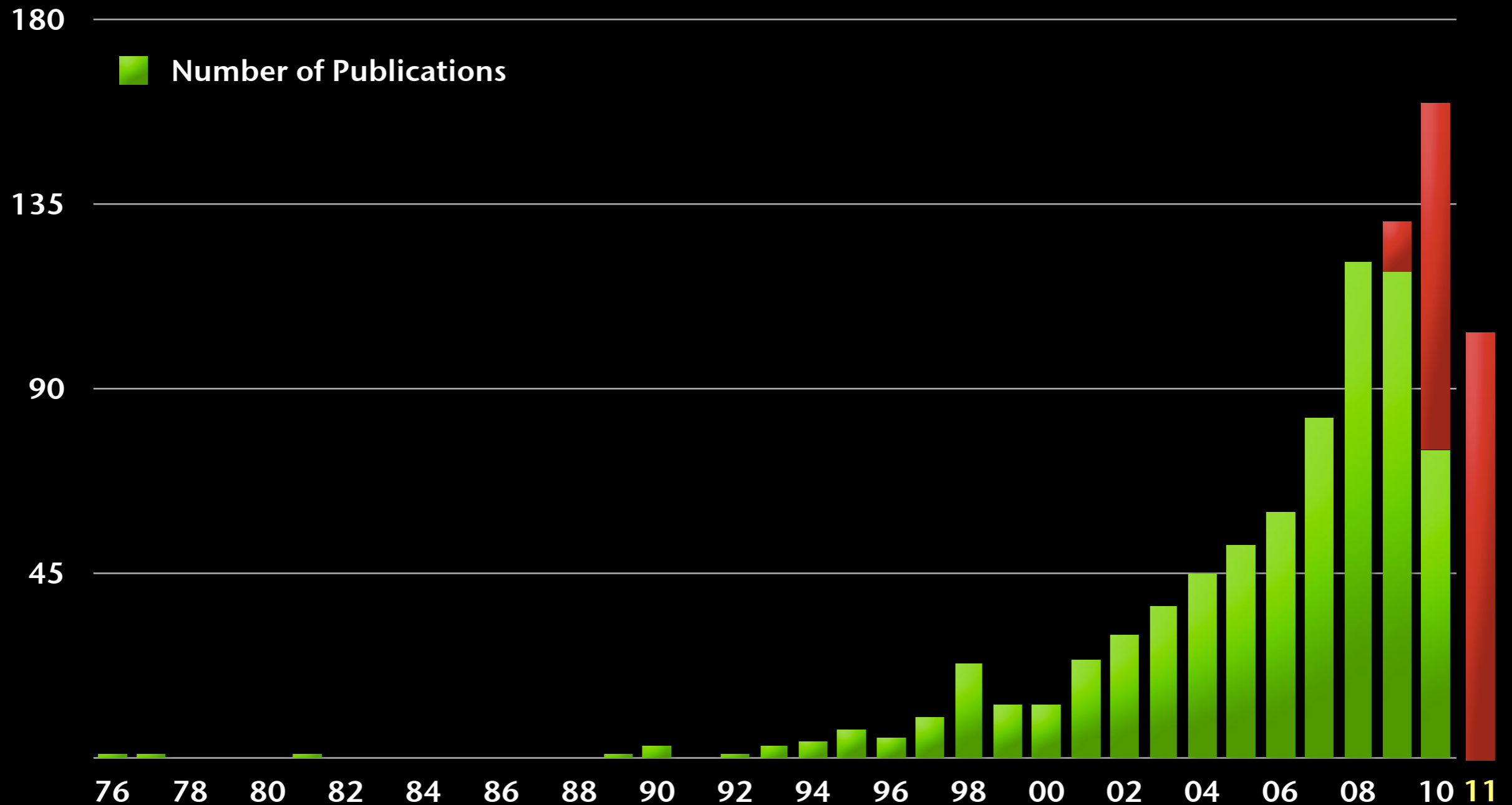
## Software Engineering Application areas:

- Requirements
- Testing
- Project Management
- Refactoring
- Source Code Analysis



# SBSE

## Search Based Software Engineering



# Testing, Testing, Testing

Mutation testing

Model based testing

Automated test data generation

Web application testing

Service oriented testing

Security testing

Regression testing



# Dependence Analysis

dependence clusters

impact analysis

program and model based slicing

assessing third party code

SLIM

SLicing state based Models

ASTReNet



# Quantitative Information Flow

calculate amount of information flowing

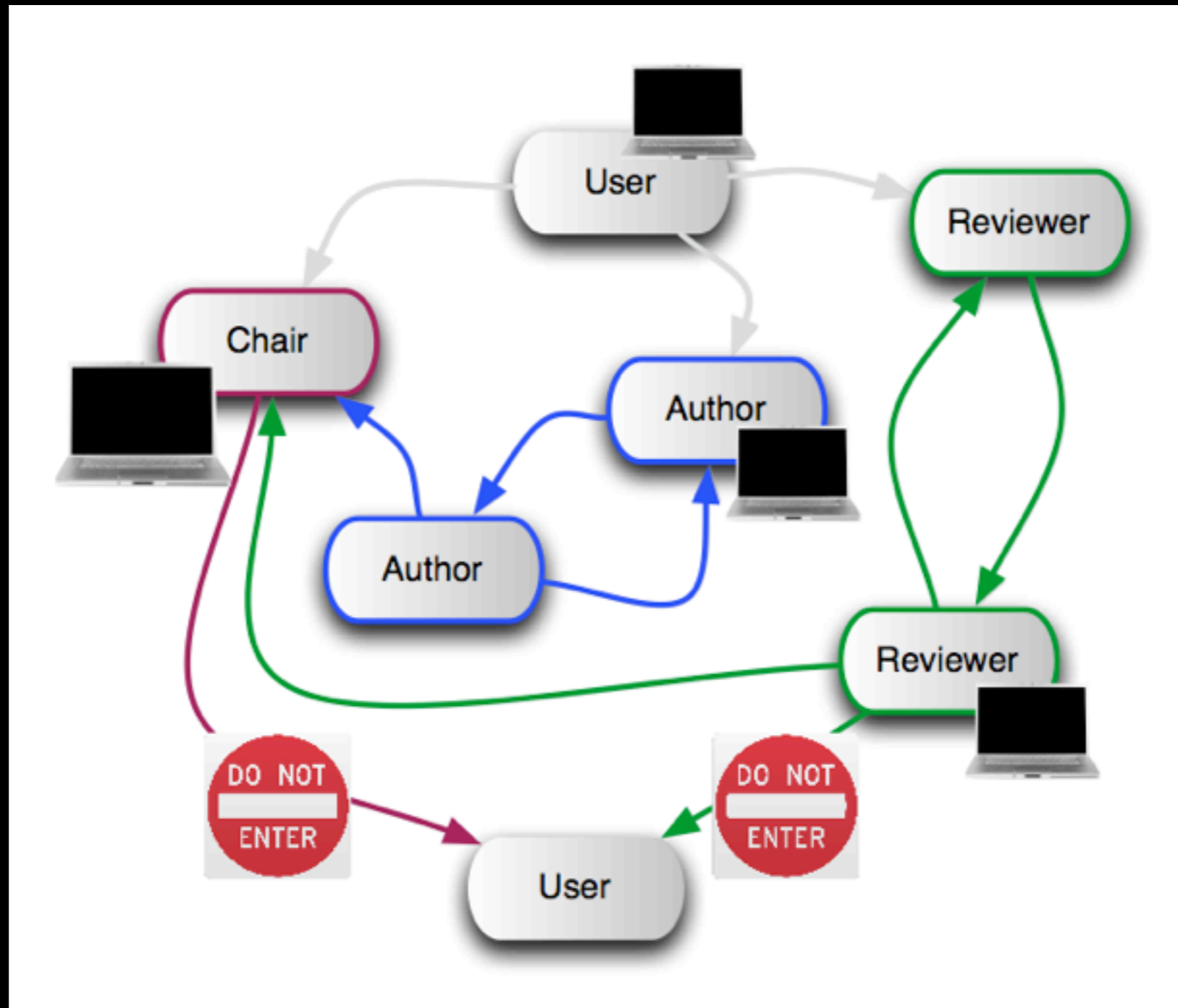
find security leaks

**Quantitative Information Flow**

An [EPSRC](#) funded research project based at three sites in London:



# Information Flow Control





# Digital Humanities/Arts

Mapping outwards from software to systems

Software Engineering Analysis translates to

- musicology
- archaeology



**PERSONAL-TOUCH**

# Three Repositories

# SBSE Repository

Analysis

extended who's who

Animations

**SBSE REPOSITORY**

This page collects the work which address the software engineering problems using metaheuristic search optimisation techniques (i. e. Genetic Algorithms) into the **Repository of Publications on Search Based Software Engineering**

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**SBSE**

- SBSE repository is maintained by Yuanyuan Zhang
- 916 relevant publications are included
- Last updated on the 25 July 2011 ([Update logs](#))

enter

The number of publications in the year from 1976 to 2011.

The ratio of SE research fields that involved SBSE.

The ratio of publications number in the world countries.

**Who's Who**

This page designed and maintained by : [Dr. Yuanyuan Zhang](#)

# GP Bibliography



## The Genetic Programming Bibliography

[ [Search It](#) | [Most recent](#) | [Top 10 Cited](#) | [Most Downloaded](#) | [Add to It](#) ]



The bibliography is part of the [Collection of Computer Science Bibliographies](#). It is maintained and managed by [William Langdon](#), [Steven Gustafson](#), and [John Koza](#).

[Add single entries](#) or email [William Langdon](#) or firstname DOT lastname AT-SYMBOL research DOT ge DOT com a bibtex file containing the entries.

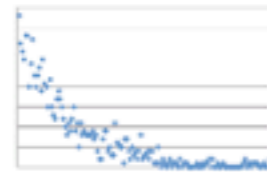
### Bibtex file

[gp-bibliography.bib \(Compressed\)](#) Over 6000 GP references

### Other formats

[refer format \(Compressed\)](#)

[text file \(Compressed\)](#)



[Author](#) format (split by first author)



[co authorship graphs](#)

### Search Interfaces

The GP bibliography is one of the many online computer science bibliographies

There are several on line search tools for these bibliographies. For example:

- o [WWW form](#) based search
  - o The [coauthor graphs](#) can also be used for searching by author name.
  - o You can find all entries for an author using a URL like this one: <http://www.cs.bham.ac.uk/~wbl/biblio/gp-html/WilliamBLangdon.html>
- Naturally you must replace **WilliamBLangdon.html** by the author's name.

### Other Resources

- o [Bibliographies of evolutionary computation conferences](#).
- o [Hints](#) on using bibliographies with PC based word processing packages
- o [Links](#) to other information on bibliographies.
- o [Subdirectory](#) containing some [tools](#) and [templates](#) for maintaining bibliographies.
- o [Links](#) to other bibliographies.
- o [Home pages](#) of some GP researchers



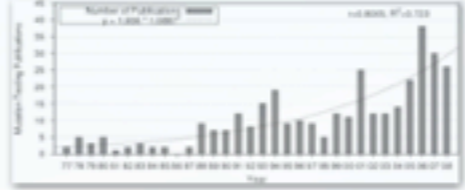
# Mutation Testing Repository

HOME REPOSITORY THEORY TECHNIQUES ANALYSIS Search Publications

PUBLICATION EMPIRICAL STUDY TOOL

## Mutation Testing Repository

Publications on Mutation Testing



Mutation Testing remains an active research area with growing interest... [READ MORE](#)

### Repository News

*Welcome to Mutation Testing repository*

**Mutation Testing** is a fault-based software testing technique that has been widely studied for over three decades. The literature on mutation testing has contributed a set of **approaches**, tools and empirical studies. This repository aims to provide a full coverage of the publications in the literature on Mutation Testing.

*Mutation Testing Survey*

Using this repository, a comprehensive analysis and survey of Mutation Testing work has been conducted. The paper presents the results of several **development trend analyses**. These analyses provide evidence that mutation testing techniques and tools are reaching a state of maturity and applicability, while the topic of mutation testing itself is the subject of increasing interest. This paper is currently published as a technical report, available from [here](#). If you want to cite results from the survey, here is the BibTeX entry:

```
@ARTICLE{Jia10,  
  author = {Yue Jia and Mark Harman},  
  title = {(A)n (A)nalysis and (S)urvey of the (D)evelopment of (M)utation (T)esting},  
  journal = {IEEE Transactions on Software Engineering},  
  year = {2010},  
  volume = {To appear},  
  number = {},  
  pages = {}  
}
```

### Quick Search

Search for  paper  author

[View all papers](#) | [authors](#)

### Repository Status

Last update: 16/06/10  
Number of Papers: 415  
Number of Authors: 298  
[Detailed status ...](#)

### Missing Paper?

Email:   
Title:

 | [email us](#)

### Links

- [.: Mutation Testing Online](#)
- [.: Mutation Testing Wiki](#)

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# COWs

CREST Open Workshop

Roughly one per month

Discussion based

Recorded and archived

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# Previous COWs@KCL

Nov'09: 35 attendees: Search Based Software Engineering

Dec'09: 21 attendees: Software Testing

Jan'10: 34 attendees: Using Static Analysis for Fault Prediction

Feb'10: 31 attendees: Operational Research for Software Engineering Methods

Mar'10: 26 attendees: Information Theory for SBSE

Apr'10: 24 attendees: Dependence Analysis and Slicing for Programs and Models

May'10: 24 attendees: Information Flow and Security

# Previous COWs@UCL

Oct'10: 34 attendees: Mootation testing

Nov'10: 36 attendees: Code Provenance and Clone Detection

Jan'11: 54 attendees: Program Slicing and Dependence

Feb'11: 34 attendees: SBSE for Early Lifecycle Software Engineering

Apr'11: 25 attendees: Security and Code

May'11: 51 attendees: SBSE (with focus on Testing)

July'11: 38 attendees: GP4SE

Oct'11: 39 attendees: Predictive Modelling and SBSE

# Previous COWs



# Next COW

## **The 17th CREST Open Workshop Software Testing and Verification**

Date: 31 January - 1 February 2011

**NOTE: Limited to 34 places**



# Thanks

Jian Ren & Yue Jia, COW Programme managers

Lena Hierl, Administrative arrangements

EPSRC, funding

Attendees and speakers

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Lena Hierl, Administrative arrangements

EPSRC, funding

Attendees and speakers

# Domestics

Fire or other alarm

Toilets

Discussions

# Domestics

Fire or other alarm

Toilets

Discussions

# *Introductions ...*