About software R&D and the "appreciable improvement"

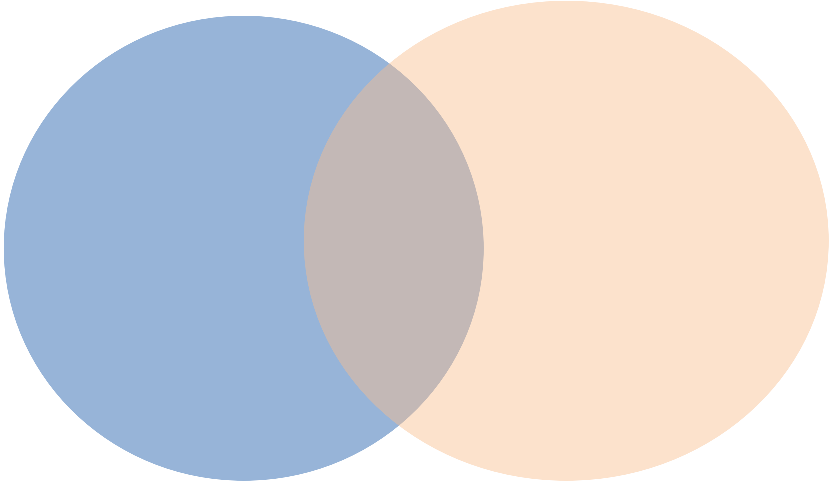
Dr. Chris Roast
C3RI, Sheffield Hallam University

Outline

- Questions?
- Approaches to software development
- Evidencing R&D
- Interesting areas

Questions?

- What software development activities/ processes might count as eligible?
- What should count as eligible?



Setting up for R&D

- Views of R&D
  - By functional unit within an organisation
  - By activity within an identified project
- For a company - clarity of intension is key
  - Policy, strategy and planning
  - Advice to a company
  - Recognising R&D post prior unlikely to work

What's Software

- software = mathematics
  - already a lot is known, much can be "derived"
  - devoid of a market and an aim

$$C = (F - 32) \cdot \frac{5}{9}$$

- software as a composite
  - but the bonds have no intrinsic strength
  - its power and its weakness
- general machines
  - Church Turning / Parallelism
  - Technology differences, faster, easier, less errors, better inter-operation

Approaches to software development

- Traditional models
  - clear pre-defined phases each with defined products
  - For example: specify user needs, specify solution, design solution, develop solution, test solution, deliver solution.
- Non-traditional models
  - phases driven by evolving needs (client, user and developer)
  - Numerous phases, with each phases product representing an articulation of needs in the form of a software artefact
- Design knowledge - patterns

Evidencing R&D

- Some examples?
- Sufficient infra-structure and processes to show that R&D has taken place.
    - Internally a paper trail of identifying researching and developing a non-trivial improvement.
    - Externally a new version release
- Prototypes / prototyping
    - Vertical / horizontal
    - Throw-away, evolutionary, incremental

Interesting areas and corners

- One non-traditional approach …SCRUM
- Free software
  - Under the GPL - "general public license"
  - Software is made freely available for others to improve. The license requires any improved versions be free
- Hard questions
  - Changes in scope / market
  - Changes in technology and their impact