

## An Industrial Strength Software Re-engineering Approach (ISSRA)

Dr Martin Ward, De Montfort University, Industry Fellow 2010 – 2014

Hosted at Software Migrations Ltd.



### Introduction

A major problem for almost all large industrial corporations is the maintenance of their IT infrastructure. The reason is very often the age of the software system. Many old, so called legacy systems, are unstructured, poorly documented and contain very complex program logic due to a long period of applying quick fixes or enhancements to adjust the system to current business processes. Today these old programming systems are becoming an increasingly serious problem as it has been identified that 90% of the costs of a typical software system arise in the maintenance phase. The practical solution for this problem is to re-engineer the whole system, but this can be a very expensive and risky option when the system has become very complex; and there is a great danger of introducing unintended side-effects and new errors.

The aim of this research is to develop a versatile and rigorous process for software evolution which would enable us to migrate, in a semiautomatic and provably correct way, even large scale systems with a high complexity onto current software platforms.

#### WP1: Type Enhancement

Develop and integrate a type inferencer and type checker into the FermaT program transformation system.

Extend the transformation library with type transformations.

Develop a process to identify and extract objects from procedural code.

#### WP2: Language Translator Development

Implement translators for C, COBOL and Java to WSL.

#### WP3: Engineering the Software Evolution Process

Integration of the ideas into a re-engineering process.

Evaluation of the process using various case studies from industry.

Deployment of the process within SML.

### My Industry Fellowship...

*has given me the opportunity to undertake a sustained piece of research into program abstraction and software evolution and to bring the results all the way to a practical application with real benefits to industry.*