Raising Healthy Software Systems

Stephen MacDonell
Diana Kirk
Laurie McLeod

AUT University
New Zealand
Intent of the position paper

• To continue to encourage researchers and practitioners to view software systems development in alternative ways
• To elaborate on the analogy between humans and bespoke software systems
• To form the basis for a platform of research and practice that leverages such an analogy
Main ideas

• There are general patterns of evolution...
• ...but each entity evolves individually
  ⇒ Each system has a life during which its behavior changes according to these patterns but with individual dimensions
• Life cycle an old notion, but the detailed consideration of analogy between life of a person and life of a system is new
Life stages

- **Conception, incubation, delivery** (SE focus)
  - Characteristics map to several norms
  - Monitoring of key indicators

- **Childhood, adolescence, adulthood** (IS focus)
  - Initial interactions monitored, moulded
  - Erratic behavior as interactions vary
  - Maturity, predictability

- **Mid-life, third age**
  - Step-changes in context
  - Delivering ongoing value but under challenge
Observations

• Outcomes due to nature and nurture
• Fits with ideas of families and generations
• Change may be intentional or reactive
• What is important depends on life stage and on individual aspirations
• Moving from core values may cause malaise
• Fits with notions of autonomy
• Some systems may **not mature readily** and stability is not a constant

• Software change should be **guided by targeted objectives** rather than generic aims

• **Social processes and context-dependent judgement** are central to management

• There are **limits** with regard to the predictability of the impact of actions and our ability to generalise across systems
Implications and insights (2)

• For software professionals – consider far greater specialisation of roles
• Accept judgement and expect informed, evidence-based practice and professionalism that is ongoing and peer-assessed
Limitations and reflections

- Analogies are not predictive; rather, they are informative.
- They are also limited e.g. no fixed incubation length for systems.
- There are sensitive issues in dealing with aspects of life that will need to be considered with care.
- There is a need to position the work formally in relation to prior research.
Conclusions and ongoing work

• Belief that the analogy facilitates further novel thinking wrt software systems
• Maps to the principles of evolution but also recognises the individuality of systems
• We are currently working on:
  – New software process model
  – New models for education and training of software professionals
Thank you for your attention.

(And don’t forget – ASE 2009 Auckland, New Zealand, November... sometime!)