Mainframe Curriculum in the UK:
Models for development

Dr Herb Daly

University of Bedfordshire, UK

University of Bedfordshire

ECC

University of Bedfordshire

- South East, UK
- 4 Campuses ~ 30 miles from London
- Luton, Bedfordshire
  - **650 Undergraduates**
  - **250 Postgraduates**
- Herb Daly
  - **Senior Lecturer (Associate Professor)**
- Department of Computer Science and Technology
- **IBM Academic Initiative 2012**

UK Higher Education System

- **England, Scotland, Northern Ireland, Wales**

- ~130 institutions chartered to award degrees
- **Word games**
  - College vs University
  - Major vs Course
  - Course vs Module
  - Semesters vs Terms
- **Bachelor degrees (BEng, BSc, BA)**
  - 3-4 Years duration
  - Placement year(?)

Z, CICS, Tomato

UK Higher Education System

- **Distinctions**
  - Age (Ancient, Modern, Regional, Post 92's)
  - Mission (Specialism, Aims)
  - Public (95%) vs Private (5%)
  - Group Affiliation (Russell, 1994, Million+)

- **Awards and measurements**
  - Research Excellence Framework (REF)
  - National Student Survey (NSS)

Professional Organisations & Media

HIGHER EDUCATION FUNDING COUNCIL FOR ENGLAND

QAA® UK Quality Assured

The Institution of Engineering and Technology

The Chartered Institute for IT

Media

Times Higher Education

INSIDE HIGHER ED

THE CHRONICLE of Higher Education

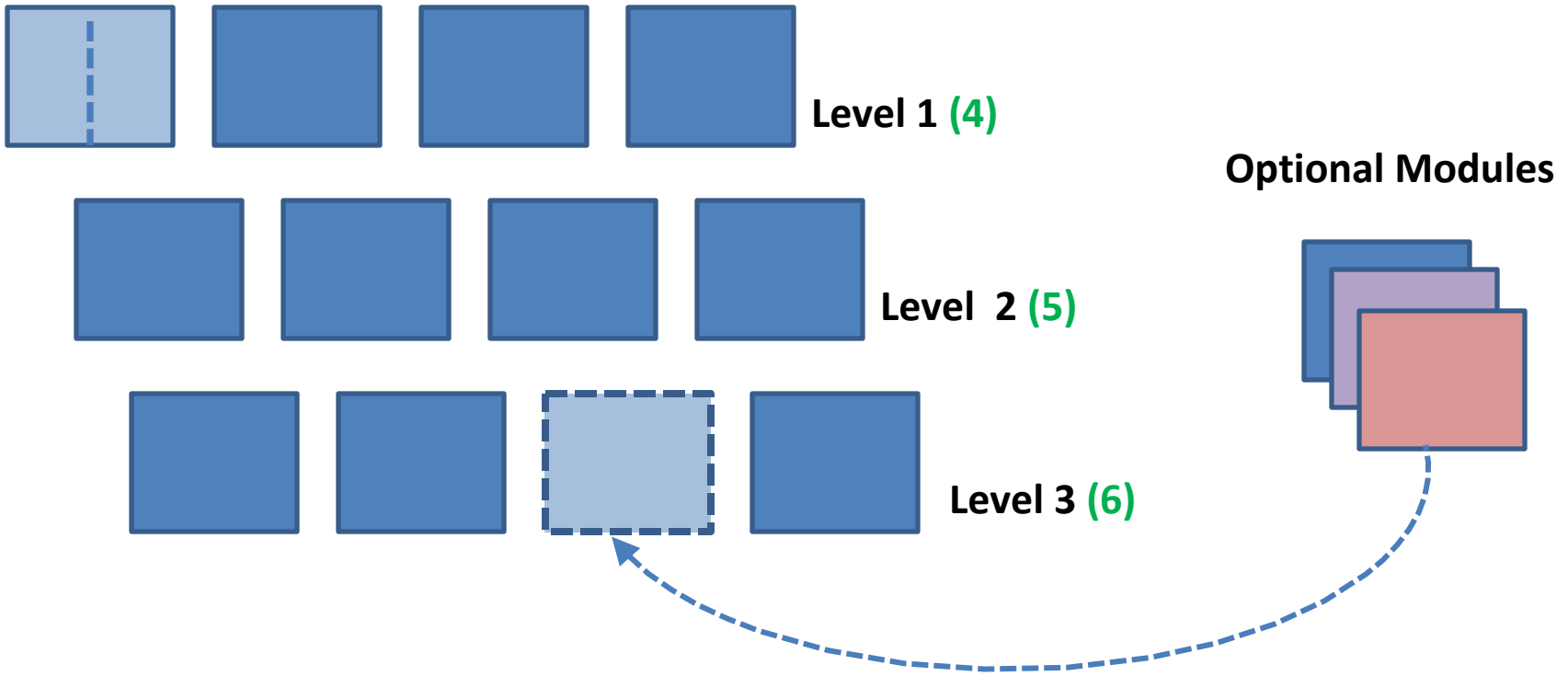
Mainframe

GSE UK Region

ukcmg THE INDEPENDENT IT USER FORUM

UK Higher Education System

Typical Credit System



- 30 or 15 credits per module. 120 credits per year. (10 hours total study per credit)

University of Bedfordshire
Undergraduate Course Portfolio
(15 Majors)

- BSc (Hons) Computer Science
- BSc (Hons) Software Engineering
- BSc (Hons) Computer Science and Software Engineering
- BSc (Hons) Artificial Intelligence and Robotics
- BSc (Hons) Computing & Mathematics
- BSc (Hons) Data Science

- BSc (Hons) Information Systems
- BSc (Hons) Business Information Systems

- BSc (Hons) Computer Networking
- BSc (Hons) Computer Security and Forensics

- B Eng (Hons) Computer Systems Engineering
- B Eng (Hons) Telecommunications and Network Engineering
- BEng (Hons) Electronic Engineering

- BSc (Hons) Interactive Digital Technologies
- BSc (Hons) Computer Games Development

Why the mainframe?

- Allosaurus
- 80 million years ago
- Large carnivore
- Very effective predator
- 35ft (10m) length

Is it more like this?

Prehistoric SuperCroc

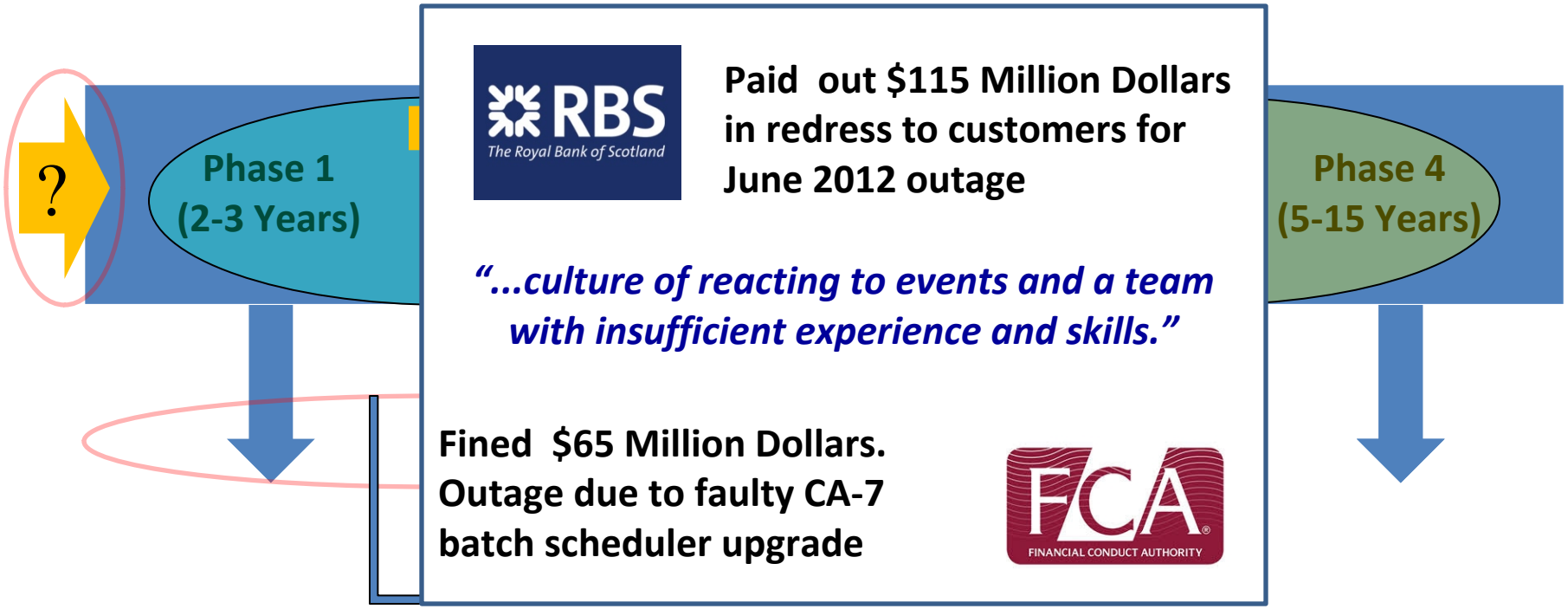
- Deinosuchus
- 80 million years
- Large carnivore
- 40ft (12m) lengt
- Very effective predator

Modern day counterparts

Deinosuchus has notable modern descendants!They are still, after all this time, very effective at what they do

Sound familiar?

Mainframe Skills: A UK Perspective



- Well developed skill base
- Most FTSE 100
- Banking, Insurance, Retail
- Early adopters (1964)
- Weak recruitment 00's
- Off shoring, Near shoring

System z Academic Roundtable
April 2012 IBM Hursley

Meeting of 15 academics at IBM Hursley

- Letterkenny Institute of Technology (Ireland)
- Universitat de València (Spain)
- Hochschule Luzern (Switzerland)
- University of the West of Scotland
- Liverpool John Moores University
- University of Sheffield
- University of Bedfordshire
- University of East Anglia
- University of Surrey

IBM®

The S^2 model

- University of Surrey & University of Sheffield
- Final year module
- Zeus system (IBM Montpellier)
- Original content + AI material (zOS, zLinux,+)
- Run by IBM subject experts (Malcolm Beattie)

The University Of Sheffield.

UNIVERSITY OF SURREY

The Liverpool JM/UWS Model

- Final year module
- Marist hosted machines
- Mostly AI material (zOS, COBOL)
- University local staff + guest lecturers

LIVERPOOL JOHN MOORES UNIVERSITY

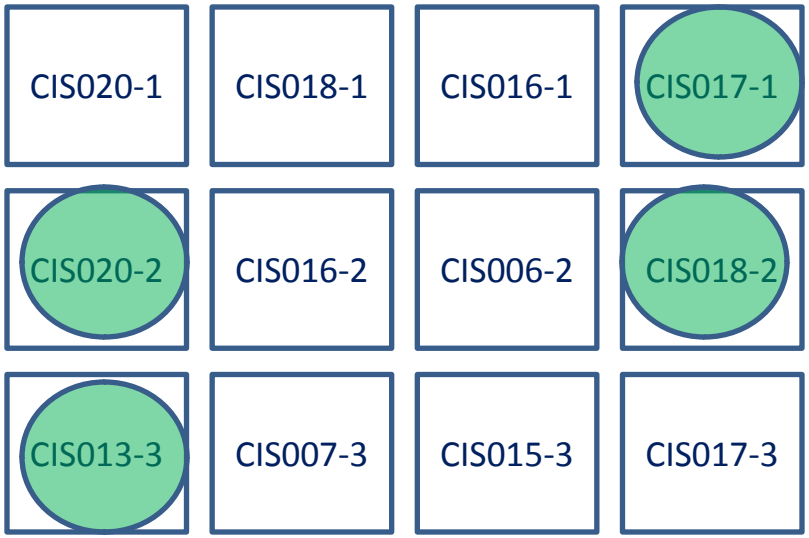
UNIVERSITY OF THE WEST of SCOTLAND UWS

The Bedfordshire Model

- Additions to existing modules
- Zeus system (IBM Montpellier)
- AI material (zOS, DB2)
- University local staff
- Student Society BEAMS
  - Bedfordshire Enterprise and Mainframe Society
- Invited guest speakers + Conference attendance

University of Bedfordshire

Computer Science BSc (Hons)



CIS020-1 Introduction to Software Development
CIS016-1 Principles of Programming
CIS017-1 Computer Systems Structure
CIS018-1 Fundamentals of Computer Studies

CIS016-2 Software Engineering
CIS018-2 Computer Security and OS
CIS006-2 Artificial Intelligence
CIS020-2 Modern Database Practices

CIS013-3 Emerging Technologies
CIS007-3 Comparative Integrated Systems
CIS015-3 Project Management
CIS017-3 Undergraduate Project

GSE101 Working Group

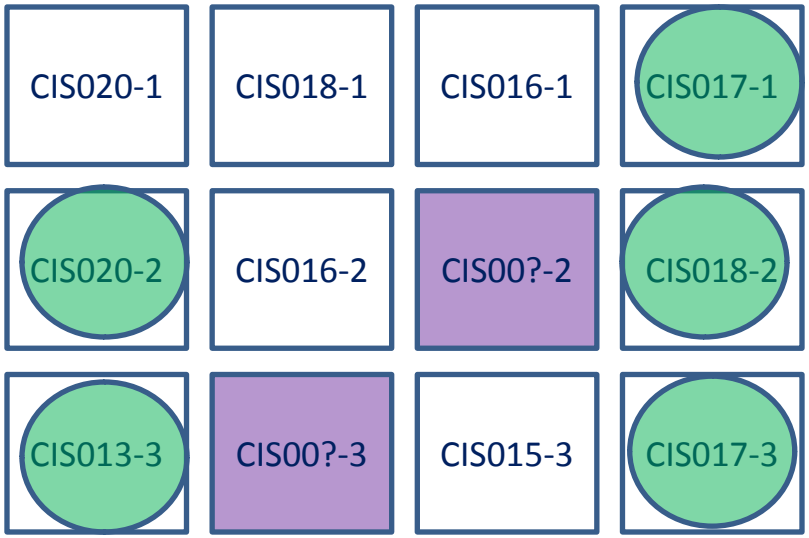
"I'm not saying lets kill all the stupid people. I'm just saying lets switch all the mainframes off and see how long they last!" Henri Kuiper zdevops.com

Supported by industry. Owned by the members.
Information sharing and networking
Sometimes irreverent!

Thoughts and Issues

- Initial effort required (Hard work!)
- Administration and quality issues
- Co-operation with professional users helps
- Experienced main framers are great people!
- Access to resources (machines, software)
- Training for staff and technicians
- Engagement with industry partners
- **Enterprise Systems BSc**

Enterprise Computing BSc (Hons)?



CIS020-1 Introduction to Software Development
CIS016-1 Principles of Programming
CIS017-1 Computer Systems Structure
CIS018-1 Fundamentals of Computer Studies

CIS016-2 Software Engineering
CIS018-2 Computer Security and OS
CIS00?-2
CIS020-2 Modern Database Practices

CIS013-3 Emerging Technologies
CIS00?-3
CIS015-3 Project Management
CIS017-3 Undergraduate Project

Thank you