

Capability computing in



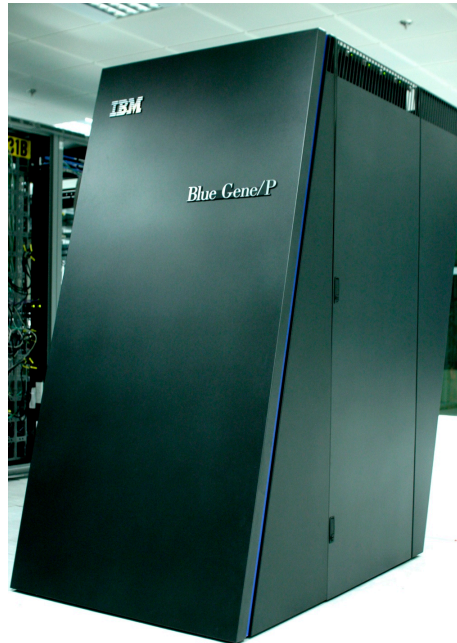
e-INIS

The Irish National e-Infrastructure

Luke Drury

Dublin Institute for Advanced Studies





Higher Education Authority
An tÚdarás um Ard-Oideachas



The Triads of Ireland

Royal Irish Academy Dublin, MS 23 P 2, the Book of Lecan, a vellum of the fifteenth century. The leaves on which the Triads are found are now bound up with the Codex H 2 17 belonging to Trinity College.

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Three candles that illumine every darkness: truth, nature, knowledge.

Three things that constitute a king: a contract with *other* kings, the feast of Tara, abundance during his reign.

Three locks that lock up secrets: shame, silence, closeness.

Three keys that unlock thoughts: drunkenness, trustfulness, love.

.....

Precisely 256 triads listed in Kuno Meyer's critical edition of 1906!



e-INIS

The Irish National e-Infrastructure

Three things that make an e-Infrastructure:

- High-End Computing
- Data and Middleware
- Advanced Networking

National Collaborative Project under PRTLI-4

- Capability computing, ability to run over thousands of cores with real interprocess communication, is a key component of modern high-end computing.
- Continental-scale e-infrastructures supporting peta-scale computing are being built in Europe and North America and are seen as key strategic investments supporting a broad range of research disciplines.

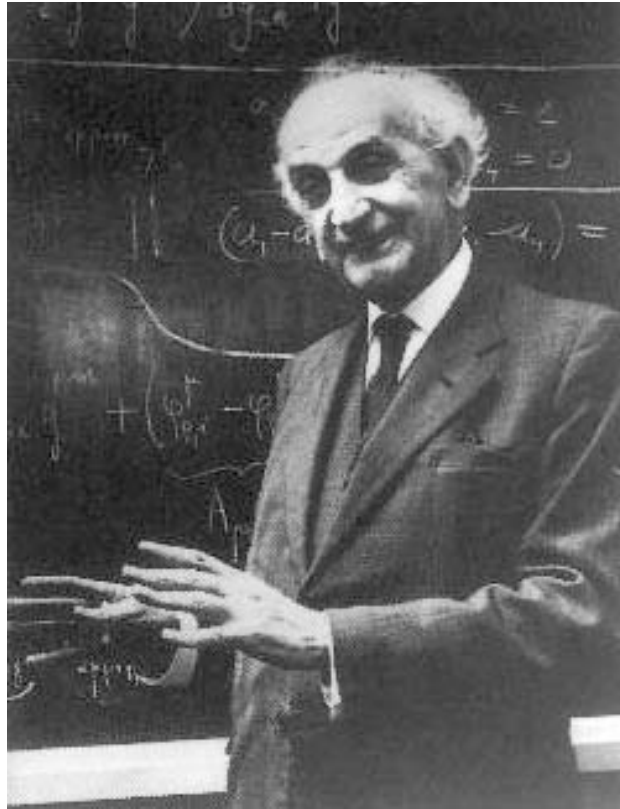
- Unique strategic decision by the Irish research community (all 7 universities, DIAS, DIT, Tyndall and RCSI) in 2006 was that we needed to move into this space with a “stepping stone” national system.
- European procurement run by HEAnet with strict “chinese walls” to select an “advanced technology” supercomputer resulted in selection of IBM and BlueGene technology.

Another modern triad; three things that make up the national capability service.

- One rack of BG/L, Lanczos
- One rack of BG/P, Schroedinger
- Support plus access to US facilities



Cornelius Lanczos
1893 - 1974



Worked in DIAS from 1954 to 1968

- One of the first “Industrial mathematicians” and worked as a consultant for Boeing before coming to Dublin.
- Best known for the Lanczos method in numerical linear algebra and a very efficient method for calculating the gamma function.
- Wrote a beautiful book “The variational principles of mechanics”

Erwin Schroedinger
1887-1966



Worked in DIAS from 1940 to 1955

- All computational chemistry, and much of computational physics, is based on solving the Schroedinger equation.
- His book “What is Life” directly inspired Crick and Watson and thus led to the growth of modern bioinformatics.
- Originated term “entanglement” for correlated quantum states - quantum cryptography and computing?

A final modern triad

Three things that drive science:
theoretical ideas,
experiments and observations,
computational simulations.

Concluding remarks

- Professional support is essential! Talk to the experts and ask for help.
- Now have a real “stepping stone” to enable Irish computational science to move to the highest levels - please use it!
- Thanks to many individuals and organisations supporting this initiative.