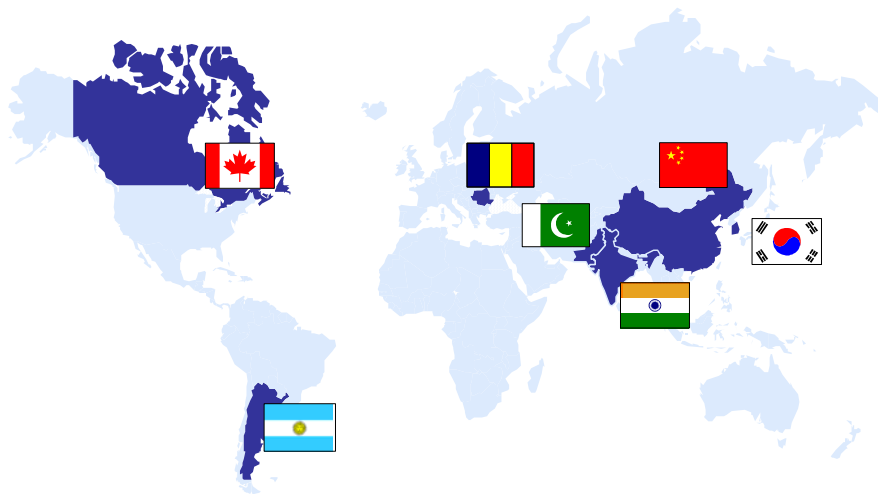


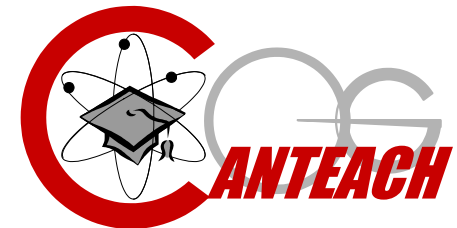


# Canada's Nuclear Knowledge Portal: Review of Functionality

Presented to IAEA Technical Meeting L?-TM-?????  
Vienna, Austria, 2005.06.20-23



*Bill Garland*  
*Academic Director*





# Nuclear Knowledge Portal

- As presented last October, in Canada, we have these uncoordinated elements:
  - CANTEACH – an open CANDU document repository (2001)
  - UNENE – a nuclear centre of excellence (2002)
  - NUCENG – an university based portal and repository (1998)
  - CNS – a society of nuclear individuals (conferences, bulletin, ...) (1979)
  - COG – an industrial consortium of operators and designers (1984). Sponsors CANTEACH and member of UNENE

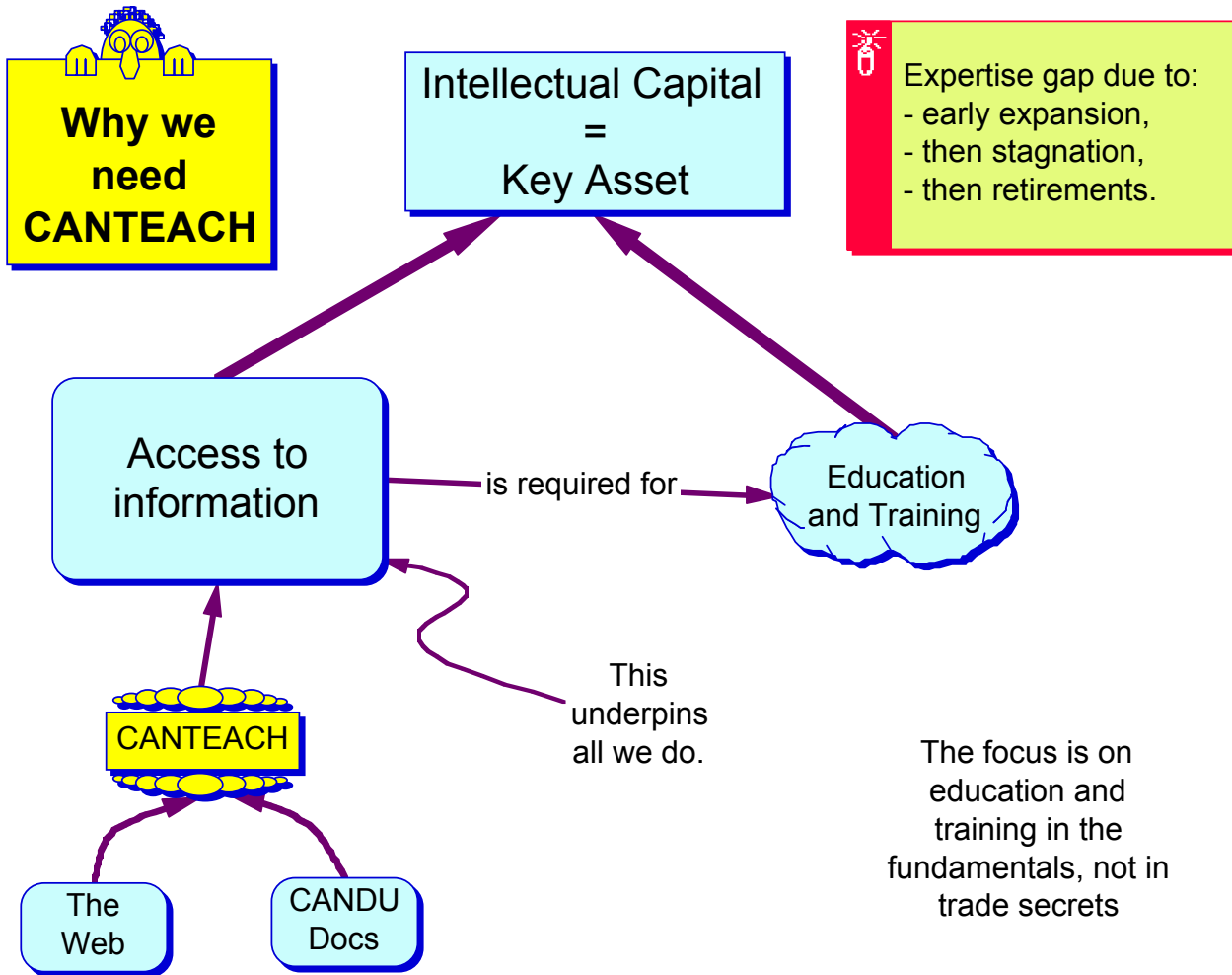


# CANTEACH Target Audience

- **Mission** To preserve technical knowledge of CANDU nuclear-electric generating system for use by present and future members of the CANDU community.
  
- **Mission** To train Highly Qualified Personnel.
  
- Thus target audience is primarily at the level of the working professional.
  - ◆ **NOTE: This target, as it turns out, leads to the identification of a serious problem that needs to be addressed.**
  
- Aimed at capturing Know-how and Know-why.

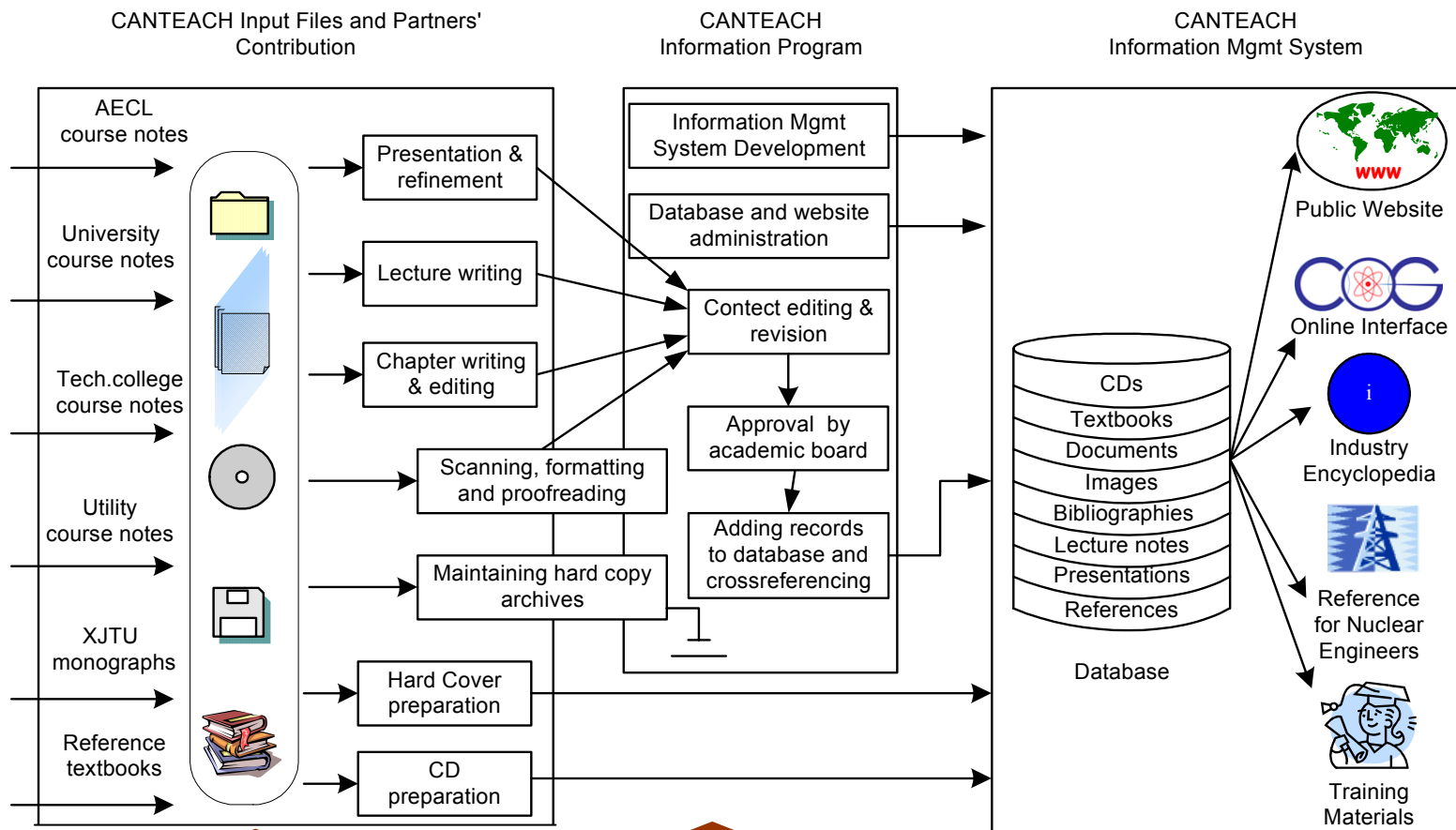


# CANTEACH Justification





# CANTEACH



**Dan Meneley**  
Project Director

2005.06.20-23



**Bill Garland**  
Academic Director

Nuclear Knowledge Portal

**Malcolm Lightfoot**  
Project Administration



# Current CANTEACH Focus

## ■ Database access

- ◆ Scripting
- ◆ Keywords

## ■ Knowledge Acquisition

- ◆ Steam Generator expert interviews
- ◆ Nuclear Fuel expert interviews
- ◆ CANDU book (R. Steed) → image copyright

## ■ Document acquisition

- ◆ Ontario Power Generation (older training courses)
- ◆ CNSC (regulator) (new training material)
- ◆ Chulalongkorn University courses

## ■ Image database

- ◆ Extraction and presentation of images in documents, etc.

## ■ Recent paper:

- ◆ Why it makes sense to give stuff away.



# CANTEACH Web Site Tour

<http://canteach.candu.org>

The screenshot displays the CANTEACH website interface. At the top left is the COG logo with the text "CANTEACH" in red. To the right is a search box with a "Search" button. Below the logo is a navigation menu: "Home ♦ What's New ♦ CANTEACH Project ♦ Library ♦ Help". A tagline reads "The most comprehensive educational and reference library on CANDU technology". A central banner says "Welcome to CANTEACH Project" and "Find out what CANTEACH is". The main content area is a grid of boxes: "Concept Map Library" (See the bigger picture of how technical information on CANDUs is organized), "CANDU Systems and Components" (Information organized by BSI, components, etc.), "Site Map" (with a globe icon), "Help Desk" (with a red question mark icon), "Teacher's Lounge" (Introduction to CANDU, Bibliography, Who's Who, Links), "Documents Library" (Browse, search and download documents, with a stack of books icon), "Image Library" (Browse, search and download images), "New Arrivals" (with a green exclamation mark icon), and "Index" (with a stack of books icon). A footer bar at the bottom says "CANTEACH Library".



# Some issues

- Document acquisition hampered by
  - ◆ Availability of experts (too busy, too decayed, too retired...)
  - ◆ Availability of documents (lost, hidden, ...)
  - ◆ Unwillingness to release documents (IP, security, expertise self-protection, ...)
  - ◆ Availability of people to do knowledge acquisition (we have other full time jobs, ...)





- CANTEACH is about info. Low budget (\$150k/yr)
- UNENE is about delivery (\$3M/yr).
- UNENE generates Highly Qualified Personnel.
- Hope to make CANTEACH the repository for UNENE.



# Current UNENE Focus

- 5 new professors installed (Industrial Research Chairs)
  - ◆ Need to ensure that research activities and products are archived.
- Joint Master's Degree (course based)
  - ◆ Course material is being captured; some lectures are recorded.
  - ◆ Gaining experience with modular format → web casting to come.
  - ◆ Access restricted to people with good academic marks.
  - ◆ Professional Development gap identified.
  - ◆ Remedial courses needed.
  - ◆ Course needed on modelling. Incorporate JUMP lessons.



“Strength Through Cooperation”

# UNENE Web Site Tour

<http://www.unene.com>

HOME

**UNENE**  
University Network of Excellence in Nuclear Engineering ...

Excellence in Nuclear Engineering

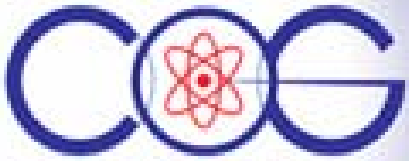
The University Network of Excellence in Nuclear Engineering (UNENE) is an alliance of universities, nuclear power utilities, research and regulatory agencies for the support and development of nuclear education, research and development capability in Canadian universities. UNENE was established as a not-for-profit corporation by the Government of Canada with Letters Patent issued July 22, 2002.

**Objectives**

The main purpose of UNENE is to assure a sustainable supply of qualified nuclear engineers and scientists to meet the current and future needs of the Canadian nuclear industry through university education, university-based training and by encouraging young people to choose nuclear careers. The primary means of doing this are to establish new nuclear professorships in six Ontario universities and to enhance funding for nuclear research in selected universities in order to retain and sustain nuclear capability in the universities, now in danger of being lost. The Network will organize and deliver through its universities educational programs appropriate to students planning to enter the industry and to those already employed.

To find out more about UNENE sponsored research and educational programs...

[CLICK HERE TO ENTER THE SITE](#)




- CANTEACH is about info.
- UNENE is about delivery.
- NucEng is about students.
  - Courses
  - Who's Who
  - Careers
  - Links
  - Forums and List servers



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# NucEng Web Site Tour

<http://nuceng.mcmaster.ca>

 Nuc Eng
<a href="#">Home</a>
<a href="#">--Help</a>
<a href="#">--FAQ</a>
<a href="#">--Career</a>
<a href="#">--Downloads</a>
<a href="#">--Univ Comm</a>
<a href="#">--MNR</a>
<a href="#">--CANNUC</a>
<a href="#">--Humour</a>
<a href="#">Announce</a>
<a href="#">Nuc Ed</a>
<a href="#">--Who's Who</a>
<a href="#">--Nuclist</a>
<a href="#">--Nuc Dip</a>
<a href="#">--UNENE</a>
<a href="#">--CANTEACH</a>
<a href="#">--CNS</a>
<a href="#">Research</a>
<a href="#">--Interests</a>
<a href="#">--Students</a>
<a href="#">--Publications</a>
<a href="#">--H2O Prop.</a>
<a href="#">--D2O Prop.</a>
<a href="#">Courses</a>
<a href="#">--EP3D3</a>
<a href="#">--EP4D3</a>
<a href="#">--EP6D3</a>
<a href="#">--EP4U4</a>
<a href="#">--EP6E3</a>
<a href="#">--EP712</a>
<a href="#">--EP714</a>
<a href="#">--EP716</a>
<a href="#">--EP718</a>
<a href="#">--EP704</a>
<a href="#">--SNER</a>
<a href="#">--Nucintro</a>

## Home Page **Nuclear Engineering** ([Bill Garland](#)), Department of [Engineering Physics](#),

[McMaster University](#)

Nuclear Engineering home url: <http://nuceng.mcmaster.ca>

This page updated on 09/17/2004 12:35:58

[FAQ](#) | [What's \*\*NEW\*\*](#)  
[Help](#) | [Search & Site Map](#)



### Hello, hello! Wot's this, then?

This is a site for students and others interested in Nuclear Engineering as it relates to the program in the Department of Engineering Physics, McMaster University. Enjoy. Listen to a [short introduction](#) to the site (950kb swf file). (download the required [flash player](#)).

- [Help](#) - Have a quick look to get oriented and to find helpful tips on using this site, including how to [contact me](#). Suggestions and comments are welcome. But before you do, check out the site [FAQ](#) page. Perhaps your question has already been answered.
- [FAQ](#) - Frequently asked questions for this site.
- [Careers](#) page - links to full-time and summer career and job information, including at our own reactor - *Jobs, jobs, jobs!!! Now contains articles relating to supply and demand.*
- [Downloads](#) Related to the Nuclear Industry.
- Canadian Nuclear Society [Universities Committee](#) - a committee devoted to assist in the coordination the activities of Canadian universities with nuclear programs, including the CNS Student conferences.
- [McMaster Nuclear Reactor](#) (tours available) - *You haven't lived until you have seen the light! [See the movie](#) - Hey Barry, you're famous!*
- [CANNUC Discussion Forum](#) - This site was started in the hope of promoting discussion regarding "all things Nuclear". Students and employees are invited to get connected via this discussion / posting board - *setup by Rob Pasuta of the McMaster Nuclear Reactor - Go Rob!*
- [Humour](#) - Take a break from work.
- Looking for general nuclear info, courses, links, technical reports, etc.? Check out the links below.

### Announcements



- CANTEACH is about info.
- UNENE is about delivery.
- NucEng is about students.
- CNS is about professionals as individuals.
  - Seminar type courses
  - Conferences
  - Fellowship and contacts
  - Forums and List servers



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# CNS Web Site Tour

<http://www.cns-snc.ca>

The screenshot shows the homepage of the Canadian Nuclear Society (CNS). At the top, there is a header with the CNS logo (a stylized atom) and the text "CANADIAN NUCLEAR SOCIETY" and "SOCIÉTÉ NUCLÉAIRE CANADIENNE". Below this is a navigation menu with links: Home, 25th Birthday!, Branches, Bulletin, Conferences & Courses, Contact us, Council, Education, Event Calendar, Honours & Awards, Jobs, Media, Member C.V.s, Membership, News, Nuclear History, Nuclear Links, and Publications. A sidebar on the left contains a link for the "6th International Conference on Simulation Methods in Nuclear Engineering". The main content area features a large graphic of a stylized atom with a red maple leaf and a list of menu items: About the CNS, Activities, Publications, CNS Membership, and Contact Us. At the bottom, there is a footer with information about PDF files, a link to Adobe's Acrobat Reader, and a note that the website is maintained by the CNS Internet Committee. It also includes a visitor count: "You are visitor number 48,804 since January 23, 2001." and a link to the French version of the site.



- CANTEACH is about info.
- UNENE is about delivery.
- NucEng is about students.
- CNS is about professionals as individuals.
- COG is about industrial partnerships in R&D
  - Shared R&D cost
  - Shared R&D facilities
  - Creation of and access to closed information databases





"Strength Through Cooperation"

# COG Web Site Tour

[www.candu.org](http://www.candu.org)

CANDU Owners Group Inc.



"Strength Through Co-operation"

*La force dans la coopération*

협조를 통한 상호 이익

*Forta prin cooperare*

*Sólides a través de la cooperación* 携手并进

[Home](#) ♦ [Corporate Info](#) ♦ [Projects](#) ♦ [Resource Centre](#) ♦ [Help](#) ♦ [Contact Us](#)



[How does a CANDU Reactor work?](#)

Last updated  
<January 9, 2004>

The CANDU Owners Group Inc. (COG) is a not-for-profit organization dedicated to providing programs for cooperation, mutual assistance and exchange of information for the successful support, development, operation, maintenance and economics of CANDU technology. All CANDU Operators in the world are members of COG.



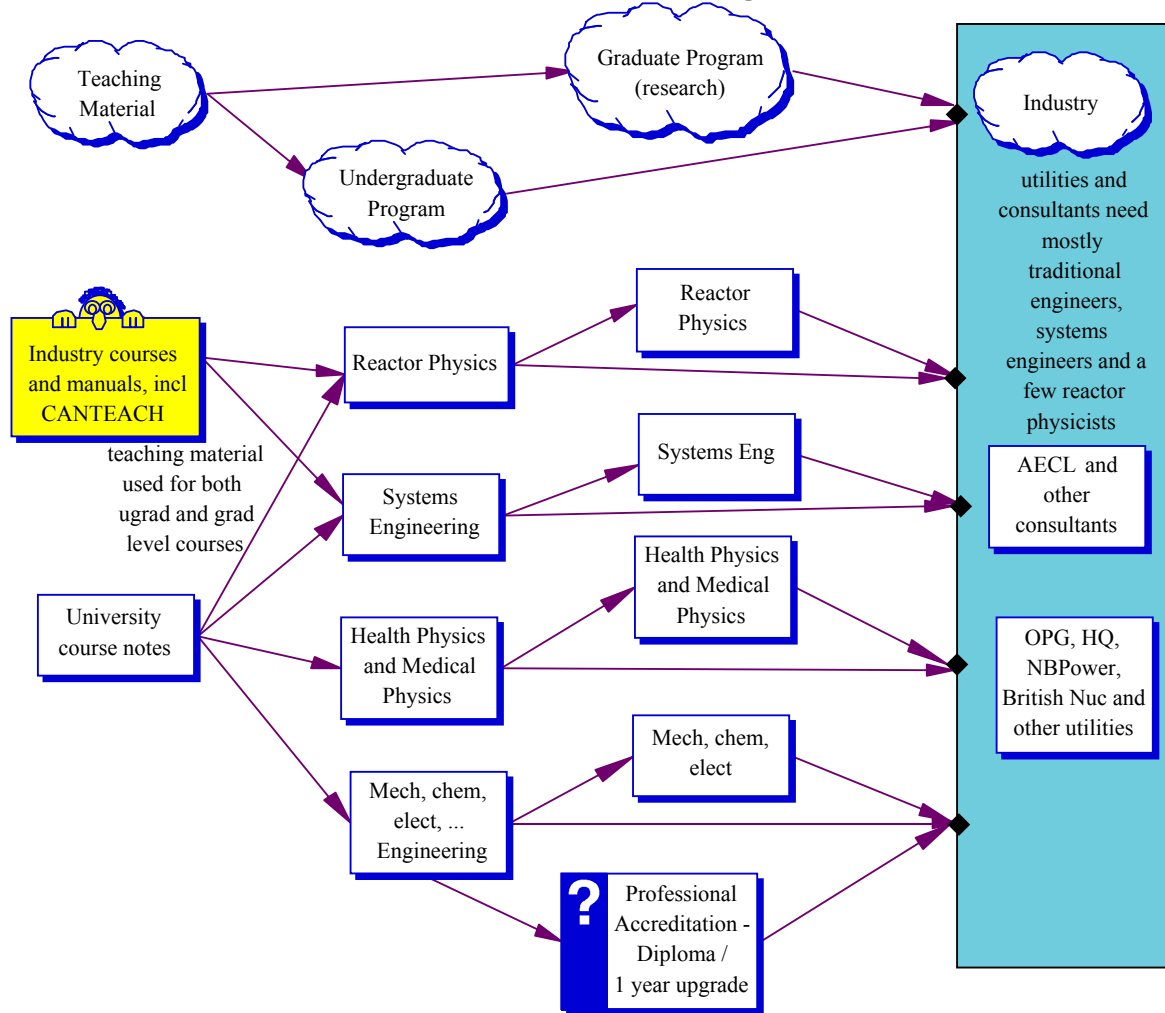
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480 University Ave., Suite 200, Toronto, ON, M5G 1V2, Phone: +1 416 595-1888; Fax: +1 416 595-1022; E-mail: [coq@candu.org](mailto:coq@candu.org)



# What's the education situation?

## Nuclear Education Program





# What's the problem?

- Professionals come from the universities
  - ◆ Inadequate preparation for industry
  - ◆ Research emphasis over development and teaching
  - ◆ Lack of systems approach
  - ◆ Self-reinforcing myopia
  - ◆ No upgrade path for C students
  - ◆ Grades not a good measure of the person
  - ◆ System shuts out and destroys people
- University is not going to change its mandate or structure for industry
  - ◆ It is answerable to the public, not to industry



# Where is industry in all this?

- Industry is faced with a huge hiring and expertise gap problem
  - ◆ They cannot afford the training cost
  - ◆ Industry time horizon is too short
  - ◆ Industry cannot give accredited courses
  - ◆ Big mismatch between what industry needs and what universities supply



# What do we need?

- We are not going to change industry or the university
- Therefore, need
  - ◆ Access to information
  - ◆ Professional development upgrade path
  - ◆ Access to mentors and apprenticeship
  - ◆ Better measures of the person
  - ◆ Remedial programs
  - ◆ Bridging programs



# Where does the portal fit in?

- The portal needs to provide access to information on
  - ◆ Documentation (technical and otherwise)
    - IP issues – standardizations?
    - Security protocols?
  - ◆ Education and training programs
    - Emphasis on professional development
  - ◆ Information on education and training opportunities such as
    - Scholarships
    - Reciprocal agreements and exchanges
    - Etc.
  - ◆ Promotion of International accreditation
    - Provide information on what we should measure, etc.
  - ◆ Web enabled learning



## ■ The IAEA Nuclear Knowledge Portal should

- ◆ Provide access to technical information
  
- ◆ Provide access to information to help address structural issues like
  - Document acquisition
  - University – industry programs and problems



*"Strength Through Cooperation"*

End

