

Status of LCA Research Worldwide

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

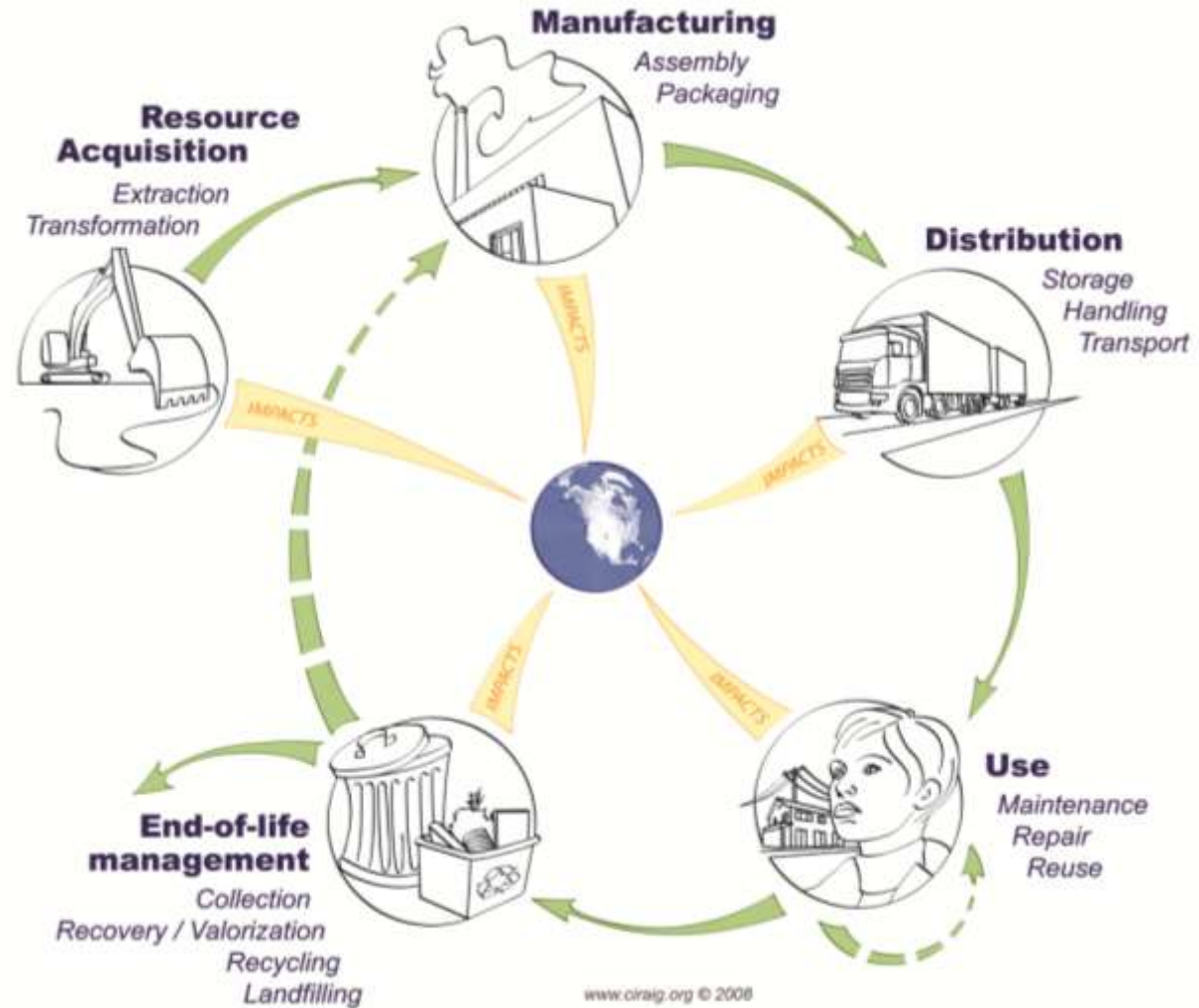
CIRAIG^{MC}
.org

Centre interuniversitaire de recherche sur le
cycle de vie des produits, procédés et services

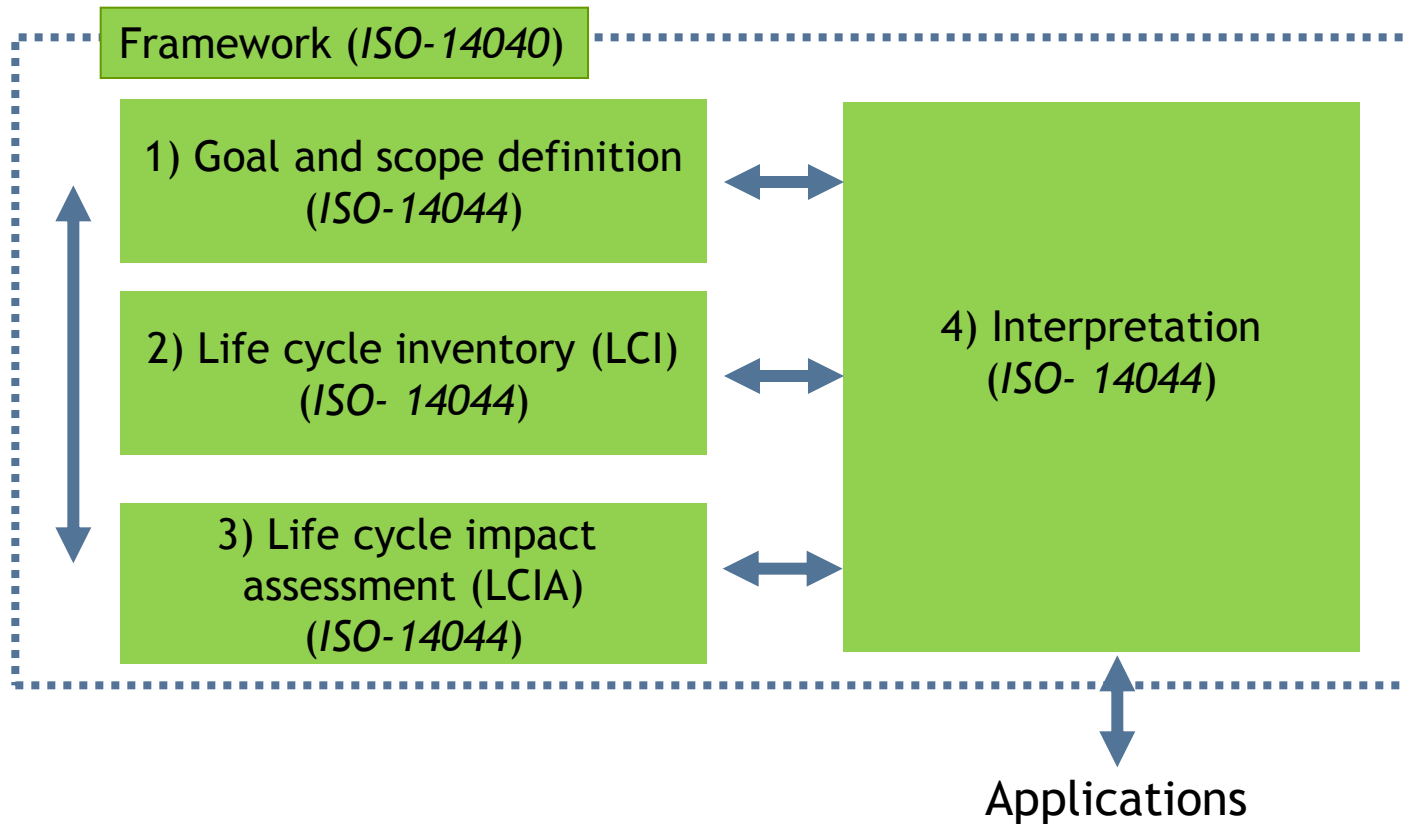

ÉCOLE
POLYTECHNIQUE
MONTRÉAL

LCA 101

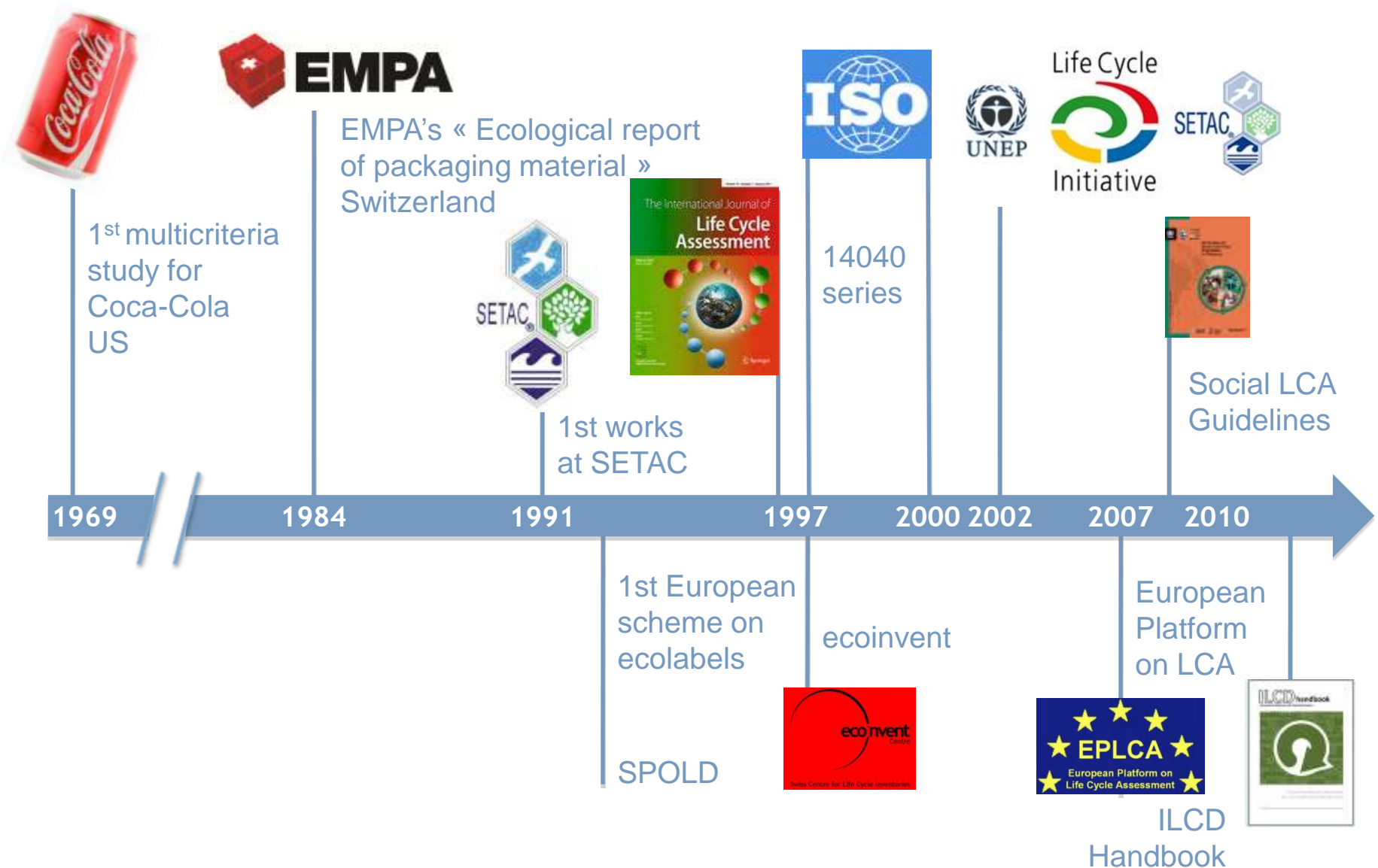
- Assessment method that **quantifies** all of the potential environmental consequences of a product or service, considering its **entire life cycle**.
- A scientific **decision-making** tool regulated by the ISO 14040 series.



LCA 101



LCA timeline



Important LCA initiatives



Important LCI databases providers

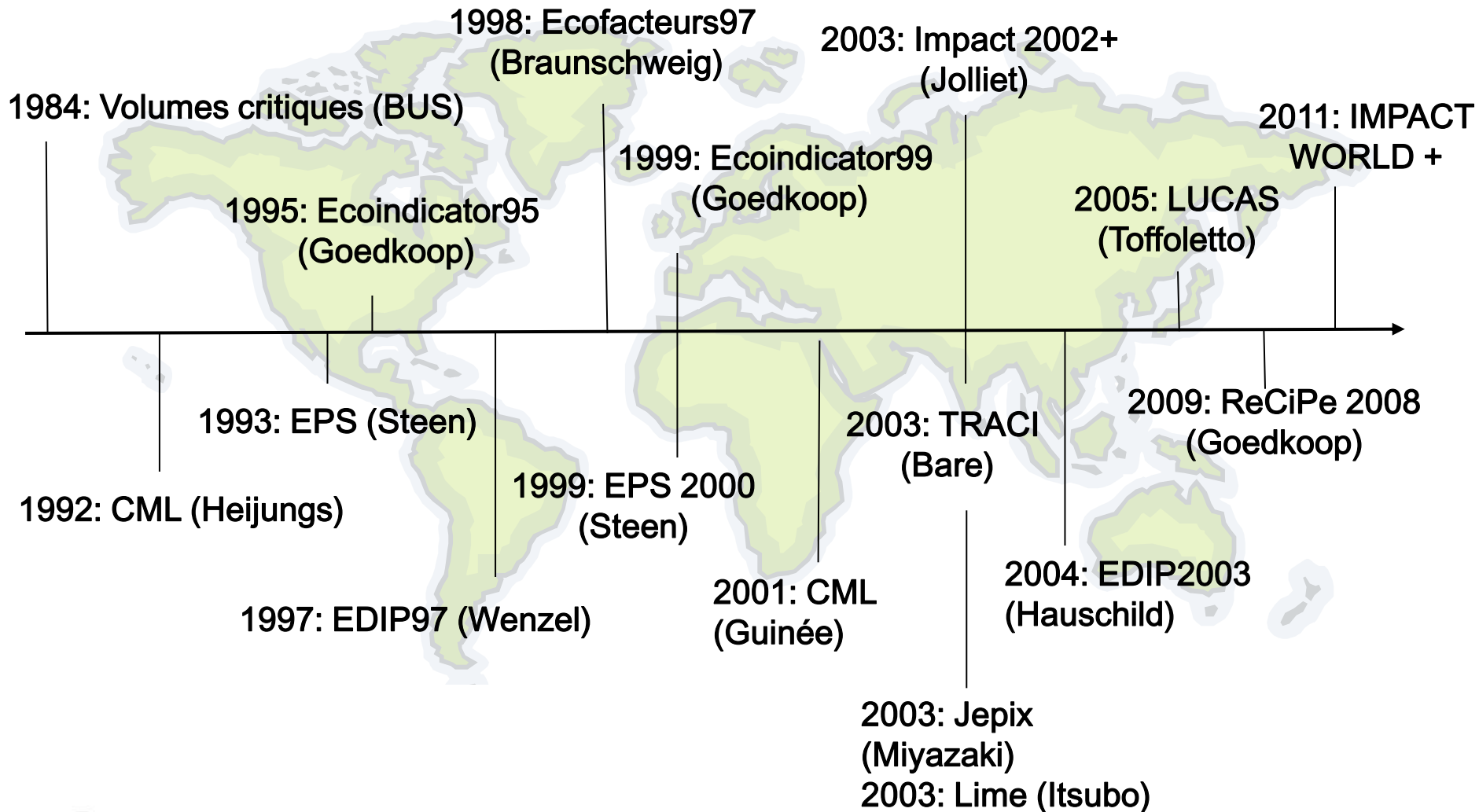


European Reference
Life Cycle Database
(ELCD)

New Canadian LCI database:



LCIA methods history



LCIA geography



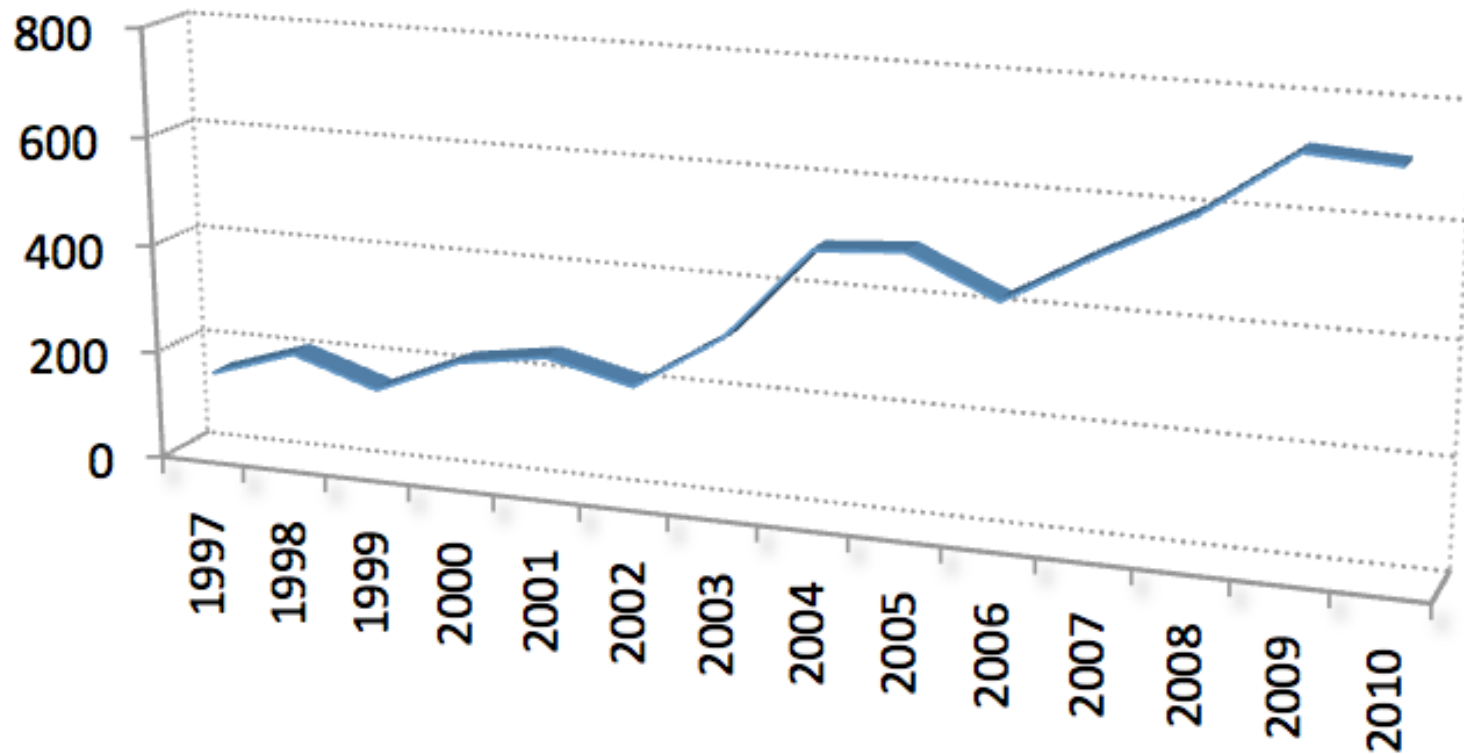
LCA academic research worldwide



LCA academic research worldwide: ~85 teams

- TECH UNIV DENMARK (90)
- UNIV CALIF BERKELEY (80)
- UNIV TOKYO (70)
- CARNEGIE MELLON UNIV (63)
- UNIV SURREY (57)
- LEIDEN UNIV (53)
- US EPA (46)
- ETH (45)
- UNIV MICHIGAN (45)
- CHALMERS UNIV TECHNOL (43)
- NORWEGIAN UNIV SCI & TECHNOL (42)
- UNIV AUTONOMA BARCELONA (39)
- DELFT UNIV TECHNOL (36)
- UNIV SANTIAGO DE COMPOSTELA (36)
- UNIV STUTTGART (36)
- UNIV TORONTO (35)
- ROYAL INST TECHNOL (34)
- ECOLE POLYTECH FED LAUSANNE (33)
- ECOLE POLYTECH (32)
- OHIO STATE UNIV (30)
- INRA (29)
- MICHIGAN STATE UNIV (28)
- MIT (28)
- SWISS FED INST TECHNOL (28)
- UNIV CALIF DAVIS (27)
- UNIV ROVIRA & VIRGILI (27)
- UNIV SYDNEY (27)
- UNIV LONDON IMPERIAL COLL SCI TECHNOL & MED (26)
- KING MONGKUTS UNIV TECHNOL THONBURI (24)
- UNIV FLORIDA (24)
- UNIV UTRECHT (24)
- ARISTOTLE UNIV THESSALONIKI (23)
- CHALMERS (23)
- NATL INST ADV IND SCI & TECHNOL (23)
- SWEDISH UNIV AGR SCI (23)
- UNIV WASHINGTON (23)
- RADBOUD UNIV NIJMEGEN (22)
- UNIV PITTSBURGH (22)
- TSING HUA UNIV (21)
- UNIV ROMA LA SAPIENZA (21)
- DALHOUSIE UNIV (20)
- UNIV JAUME 1 (20)
- UNIV NEW S WALES (19)
- KATHOLIEKE UNIV LEUVEN (18)
- PAUL SCHERRER INST (18)
- EMPA (17)
- NATL INST MAT SCI (17)
- TECH UNIV BERLIN (17)
- UNIV AALBORG (17)
- UNIV ILLINOIS (17)
- UNIV MANCHESTER (17)
- HARVARD UNIV (16)
- POLITECN TORINO (16)
- UNIV AMSTERDAM (16)
- UNIV BARI (16)
- UNIV CAPE TOWN (16)
- UNIV KARLSRUHE (16)
- ARIZONA STATE UNIV (15)
- NATL INST ENVIRONM STUDIES (15)
- PROCTER & GAMBLE CO (15)
- UNIV FLORENCE (15)
- ETH HONGGERBERG (14)
- N CAROLINA STATE UNIV (14)
- NATL INST PUBL HLTH & ENVIRONM (14)
- TECH UNIV MUNICH (14)
- TSINGHUA UNIV (14)
- UNIV BOLOGNA (14)
- UNIV BRITISH COLUMBIA (14)
- UNIV GHENT (14)
- UNIV MINNESOTA (14)
- UNIV SAO PAULO (14)
- UNIV SIENA (14)
- YALE UNIV (14)
- COLUMBIA UNIV (13)
- ENEA (13)
- NATL TAIWAN UNIV (13)
- S CHINA UNIV TECHNOL (13)
- SHANGHAI JIAO TONG UNIV (13)
- SWEDISH INST FOOD & BIOTECHNOL (13)
- UNIV CAMBRIDGE (13)
- UNIV MELBOURNE (13)
- UNIV PALERMO (13)
- UNIV QUEENSLAND (13)
- VIENNA UNIV TECHNOL (13)
- HONG KONG POLYTECH UNIV (12)
- KONKUK UNIV (12)
- KTH (12)
- NATL RENEWABLE ENERGY LAB (12)
- NATL UNIV SINGAPORE (12)
- POLITECN MILAN (12)
- UNIV PATRAS (12)
- UNIV WAGENINGEN & RES CTR (12)
- BRUNEL UNIV (11)
- CHINESE ACAD SCI (11)
- GEORGIA INST TECHNOL (11)
- INST NATL SCI APPL (11)
- LUND UNIV (11)
- MICHIGAN TECHNOL UNIV (11)
- MONASH UNIV (11)

Published peer-reviewed LCA articles since 1997



LCA academic research in Canada



Process and product design



Dairy industry



Buildings



LCE research



Cars and contaminated sites



Waste management and alternative fuels



Buildings



UNIVERSITY OF CALGARY

Life cycle design



Athena LCA Chair
Buildings and materials



Sustainable buildings



Fuels, LCVA



Methodology
databases
ecodesign
social LCA and LCC
International LCA Chair



ÉCOLE
POLYTECHNIQUE
M O N T R É A L



Affiliated to the Université de Montréal

Largest engineering school in Canada

- 15 engineering programs
- 210 professors
- 900 employees
- Over 5000 students
 - Close to 900 M.Sc.A. and Ph.D. students
- Over 40M\$/yr in research funds.

CIRAIG

Established in 2001:

37 professors and researchers from 9 universities

9 research chairs

250 graduated students

Multidisciplinary research:

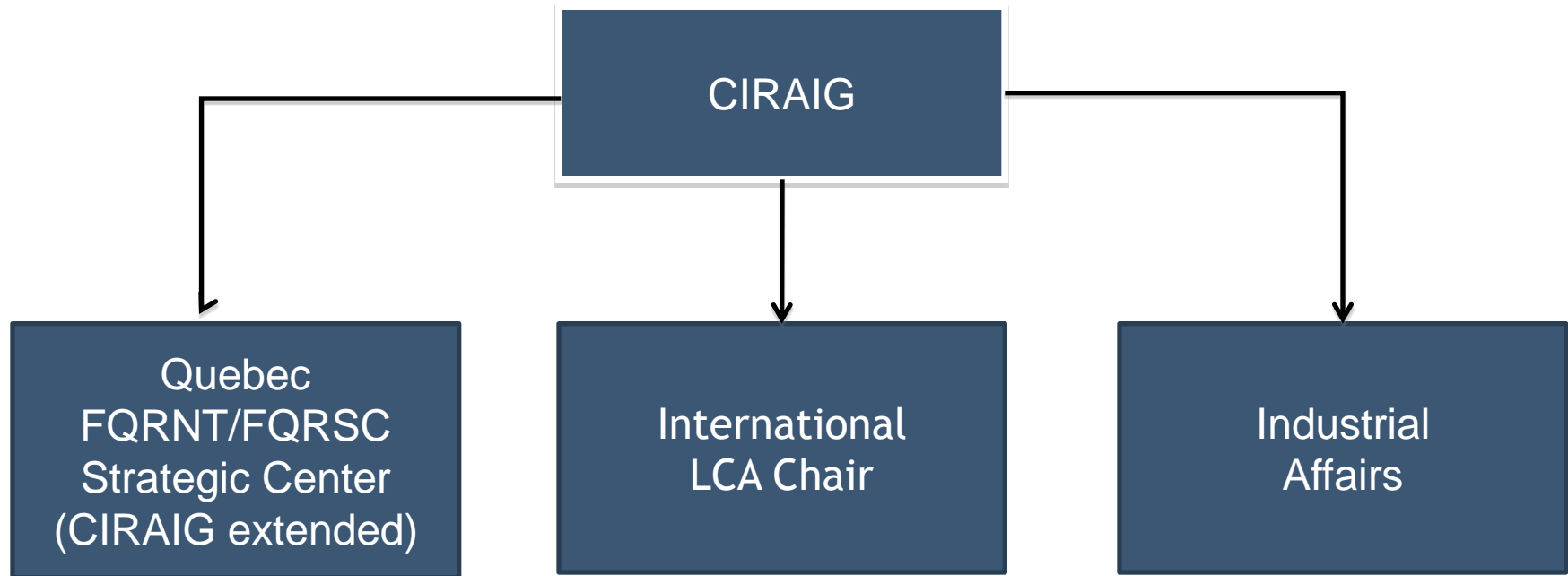
- Engineering
- Economy
- Social sciences
- Design
- Law



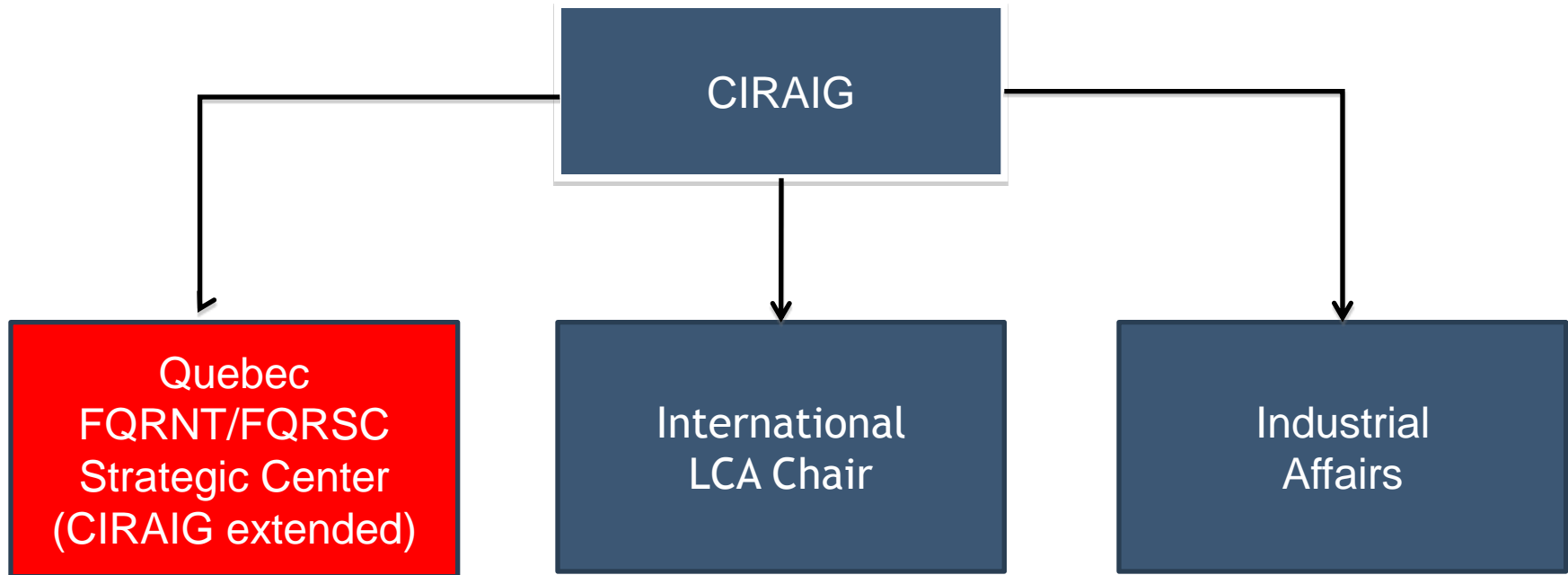
CIRAIG™

Interuniversity Research Centre for the
Life Cycle of Products, Processes and Services

CIRAIG



CIRAIG



CIRAIG: 9 Quebec universities



HEC MONTRÉAL

Université de Montréal



UQÀM

Université du Québec en Abitibi-Témiscamingue

UQAC

UNIVERSITÉ DE SHERBROOKE



École Polytechnique
de Montréal

HEC Montréal

Université de Montréal

École de technologie
supérieure

Université Laval

Université du Québec
à Montréal

Université du Québec en
Abitibi-Témiscamingue

Université du Québec
à Chicoutimi

Université de Sherbrooke

CIRAIG (Strategic Research Consortium)

1. International LCA Chair, **École Polytechnique de Mtl**
2. NSERC Industrial Chair in Environmental design and process integration in the paper industry, **École Polytechnique de Mtl**
3. Canada Research Chair for remediation of mining sites, **UQAT**
4. NSERC Industrial Chair in Management of mining wastes **Polytechnique-UQAT**
5. Chair in Ethical management, **HEC**
6. Chair in drinking water, **U. Laval**
7. Chair in « Éco-conseil », **UQAC**
8. Jarislowsky / SNC-Lavalin Chair in Management of International affairs, **HEC**
9. Chair in Sustainability for transportation, **École Polytechnique de Mtl**



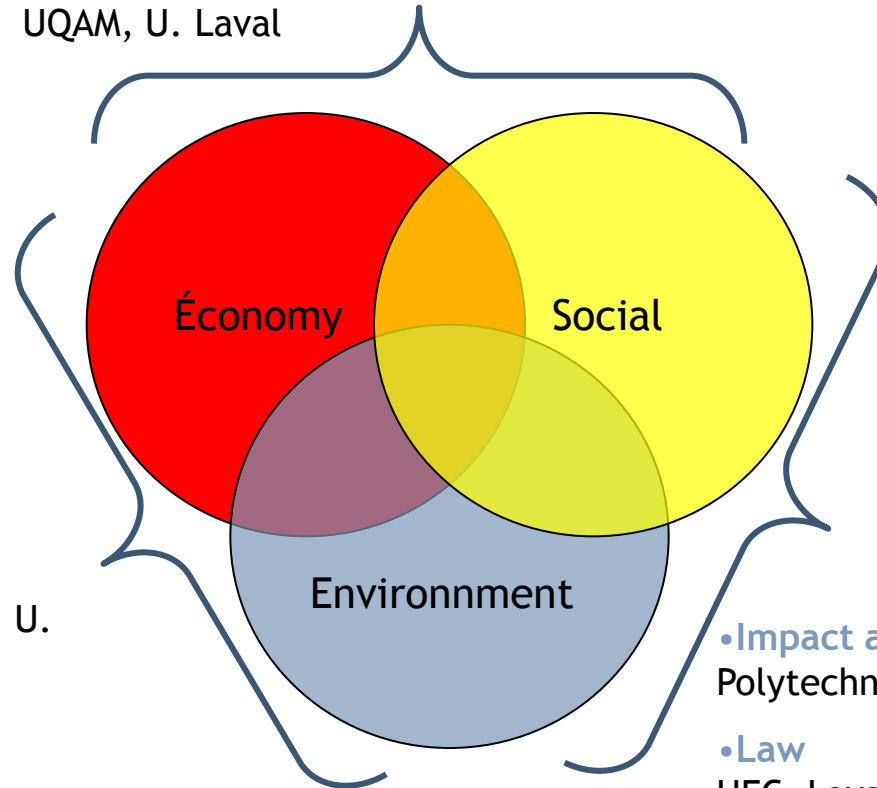
Sustainability research

- Social responsibility

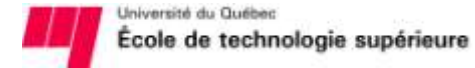
HEC, UQAM, Polytechnique

- Social Indicators

UQAM, U. Laval



HEC MONTRÉAL



- LCA engineering

Polytechnique, UQAT

- Éco-design

Université de Montréal, Polytechnique

- Pollution prevention

Polytechnique, UQAT, UdeS, U. Laval, ETS, U. Sherb.

- LCM

Polytechnique, HEC

- LCC

Polytechnique, HEC, UQAM

- Impact assessment

Polytechnique, Udm, UQAC

- Law

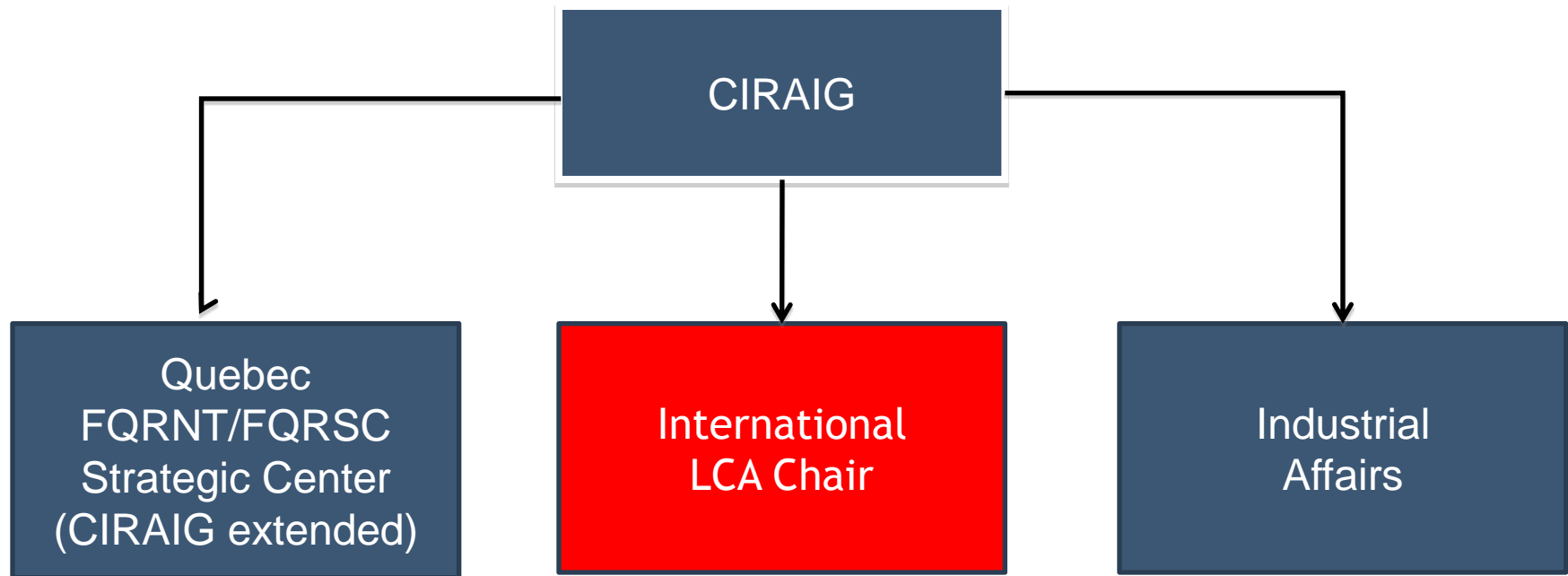
HEC, Laval, Udm

- Socio-environment communication

Chicoutimi, Laval, Udm,



CIRAIG



International LCA Chair



- First mandate: 2007-2011
- Second mandate: 2012-2017
- 15 industrial and public partners
- «One of the world most important private investment » Guido Sonnemann, PNUE



RioTintoAlcan



International LCA Chair: Activity Themes

1

Specific Case Studies

2

R&D LCI

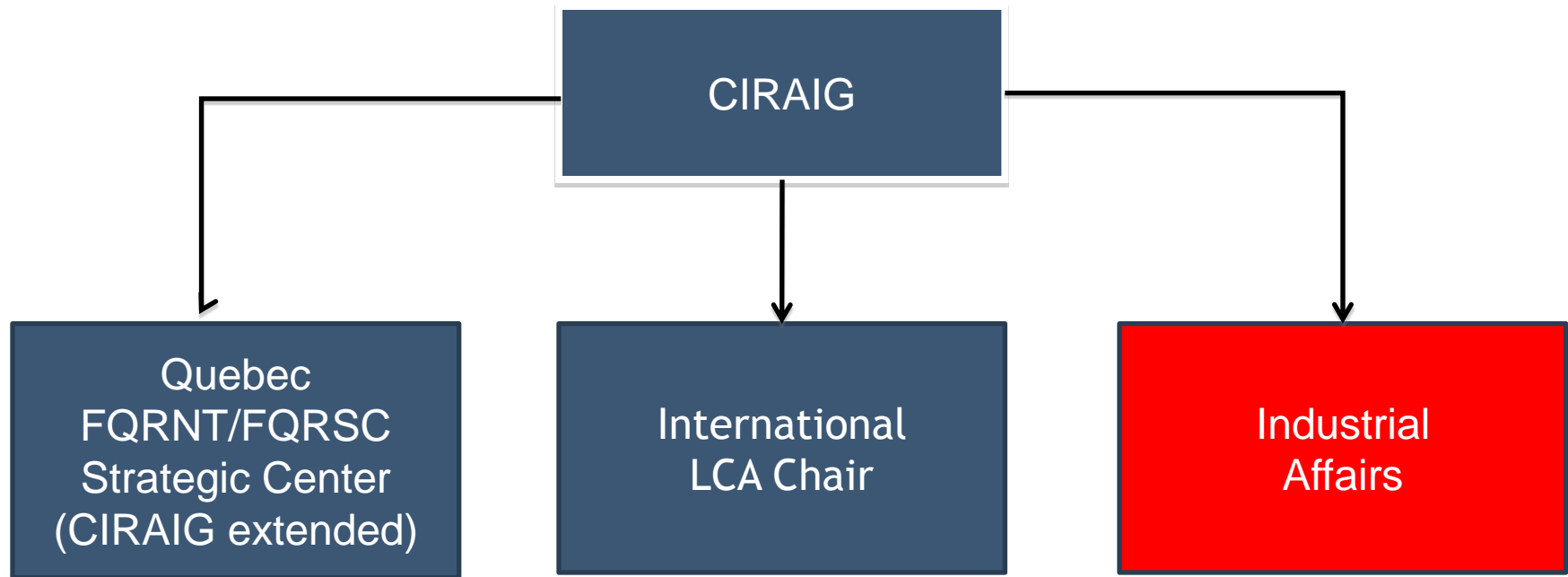
3

R&D LCIA

4

Software
development

CIRAIG



CIRAIG (Industrial Affairs)



Association de l'aluminium du Canada

Bayline

Bioetik

Bostik

Busch Marine inc.

Ciment St-Laurent

CO2 Solution

Comité consultatif pour l'environnement de la Baie-James

Commission de la Coopération environnementale de l'Amérique du Nord (CCE)

Communauté métropolitaine de Montréal

Conseil patronal de l'environnement du Québec

Espace de concertation sur l'approvisionnement responsable

Fond d'investissement en développement durable (FIDD)

Groupe Ferrari

International Paper Company

Liberté

Positech Innovation

Recy-Clone

S.O.E. Technologies

SIXTron advanced material

SOGHU

Spontex

Teknion

Our first mandate:



Partnerships

28 projects and case studies

50 specific contracts with partners

Scientific output

75 articles published in scientific journals

35 master's and doctoral theses

270 presentations and posters

Training

650 undergraduate students

265 graduate and postgraduate students

130 expert-level students

600 professionals, as part of their career development

Highly-qualified personnel

25 M.Sc.A. students

15 Ph.D. students

6 post-doctoral interns

Communications

115 specialized communications and public conferences

80 press articles

30 television and radio interviews

Communication tools

Wiki CIRAIG

The Infocycle Newsletter

Thank you.....



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Centre interuniversitaire de recherche sur le cycle de vie des produits, procédés et services

