

Team Science and Interdisciplinary Research in Lyon : building a knowledge decision confluence

Kristine Lund, CNRS, University of Lyon

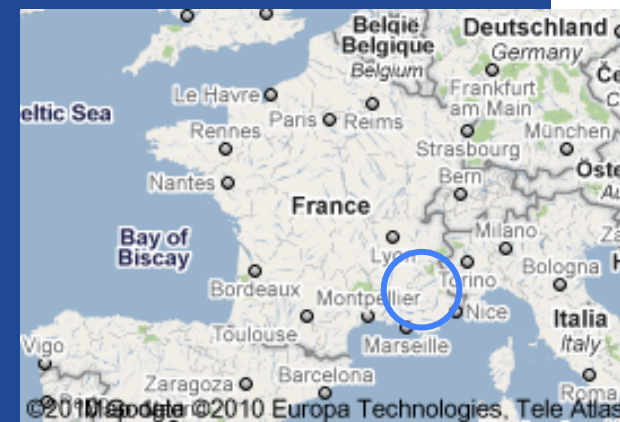


Ecole Normale Supérieure Lyon
ICAR research laboratory

Double Keynote with J. Miller
ElyT workshop 2019

March 7-14

Sendai — Naruko Osen



Presentation outline

- The general idea of a **Knowledge-Decision-Confluence**
- My background and context for ElyT workshop
 - Labex ASLAN
 - Technology Supported Collaboration
- Studying Science and the Science of Team Science
- Multi-inter-transdisciplinarity
 - Challenges
- Intervening in order to favor productive processes
 - Analysis of group interactions
 - Model of decision making in collaborative design
- Roadmap for moving forward with the **Knowledge-Decision-Confluence**



Saône-Rhône



Confluence



+ Emergence



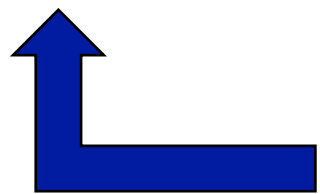
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Knowledge Decision Confluence in LSE

- A space where researchers, engineers, professors, students, and other socio-economic actors can visualize models and simulations of complex data and processes

- analyzing data from processes governed by multiple criteria
- understanding connections between data from different scales

**Interprétations
Décisions**



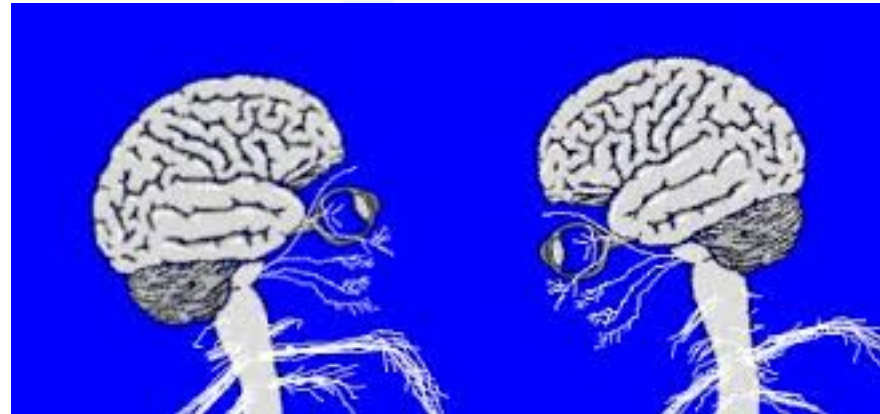
**Instrumentalize and
support
these processes**

Analysis, interpretation, decisions

- Processes governed by multiple criteria
- Understanding connections between data from different scales



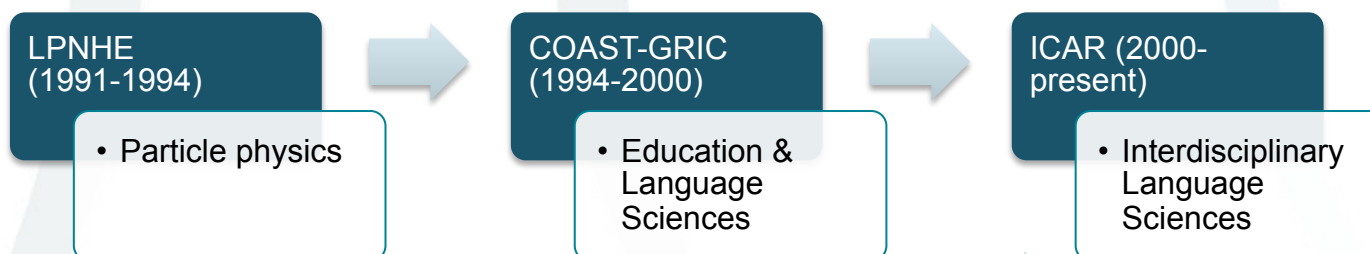
Transportation system



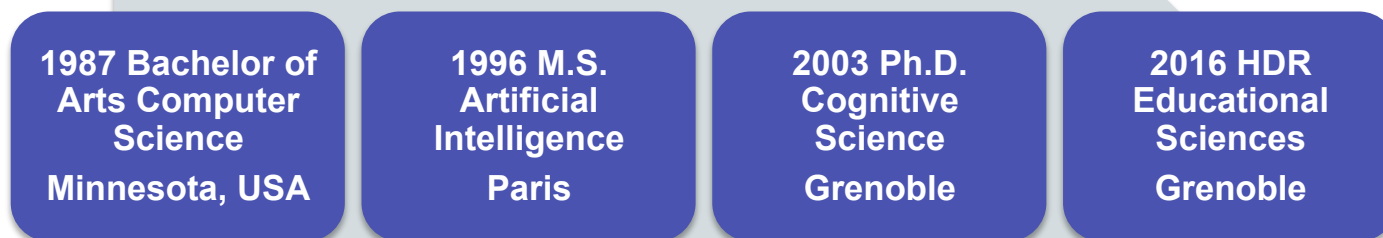
Brains “in context” : molecular, genetic, cellular, neuronal, behavioral, contextual

Background

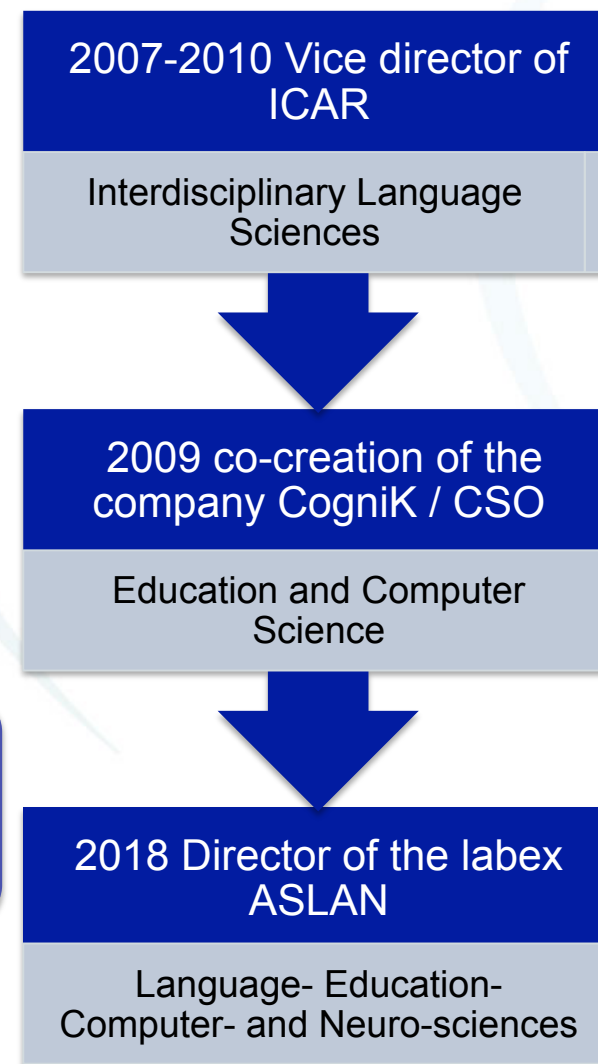
Context of Career as a CNRS Research Engineer



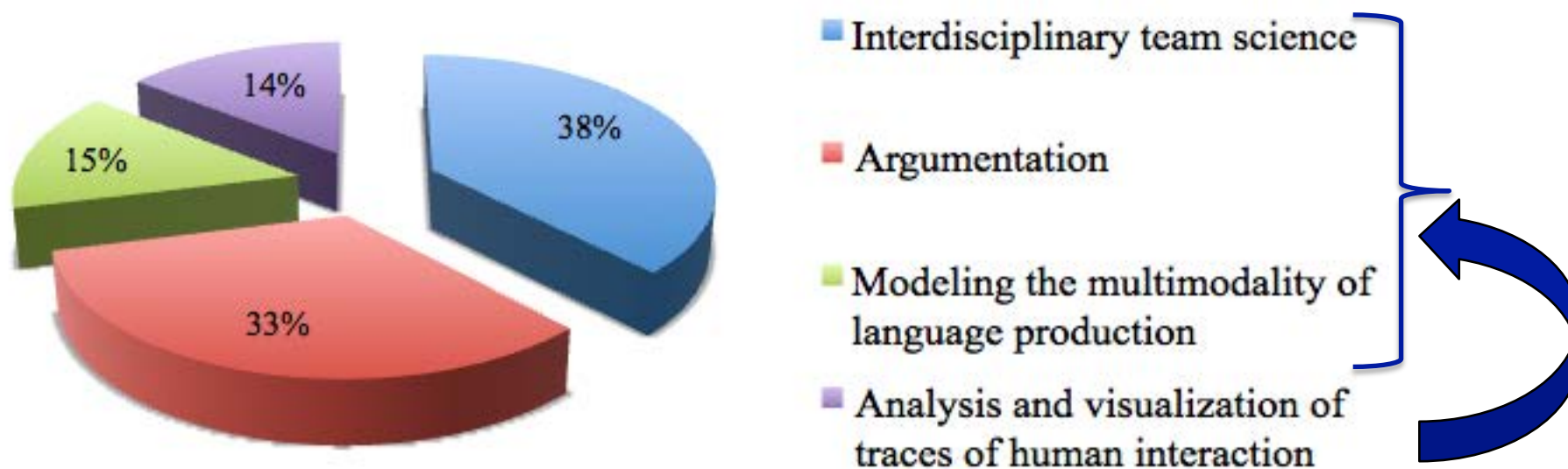
Education



Appointments / Positions



Breakdown of K. Lund's research themes in terms of publications



We built the RaaS, short for Recommendation as a Service, to make personalized content recommendations part of every user experience on any platform.

[LEARN MORE](#)


Cognik.net (Chief Scientific Officer)
Different stakeholders have different goals, timelines, beliefs, and assumptions

FR

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MOT-CLÉ







PRÉSENTATION LABEX
RECHERCHE
VALORISATION
ACTUALITÉS
LE LANGAGE POUR TOUS

BIENVENUE SUR LE SITE DU LABEX ASLAN

Phénomène biologique et social, le langage offre une multitude de facettes. Afin de comprendre cette richesse, ASLAN propose une approche scientifique intégrative et interdisciplinaire. Pour cela, le projet s'appuie sur l'expertise des laboratoires DDL (Dynamique du Langage) et ICAR (Interactions, Corpus, Apprentissages, Représentations), dont l'association offre un spectre scientifique unique en France. [En savoir plus](#)

Crossroads of Language- Education- Computer- and Neuro- sciences



SICAL : Situated Interaction, Collaboration, Adaptation and Learning (9)
SMA : Systèmes Multi-Agents (5)
TWEAK : Traces, Web, Education, Adaptation, Knowledge (8)

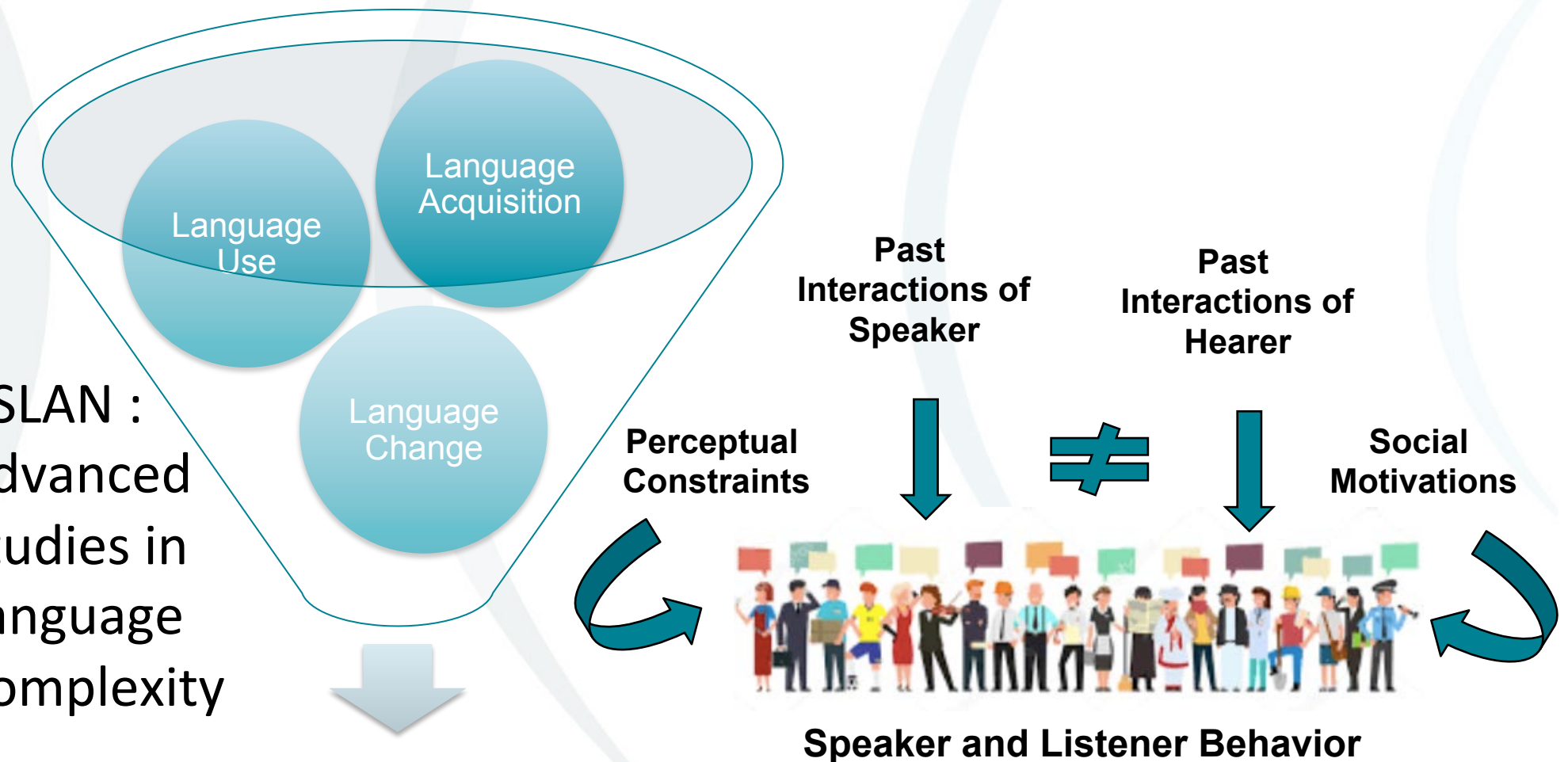


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ASLAN :
Advanced
Studies in
Language
Complexity

Complex Adaptive System

Beckner, C., Ellis, N. C., Blythe, R., Holland, J., Bybee, J., Ke, J., ... Five Graces Grp (2009). Language Is a Complex Adaptive System: Position Paper. *Language Learning*, 59, 1-26.





13TH
LYON

CSCL2019

17 → 21 JUNE
INTERNATIONAL CONFERENCE
ON COMPUTER SUPPORTED
COLLABORATIVE LEARNING



Keynote speaker



Professor Stephen Fiore USA



Science of Team Science

[Read the abstract](#)



Professor Lorenza Mondada Switzerland



Interactional Linguistics

[Read the abstract](#)



Professor Janet Wiles Australia



Technology Design and Social Robotics

[Read the abstract](#)

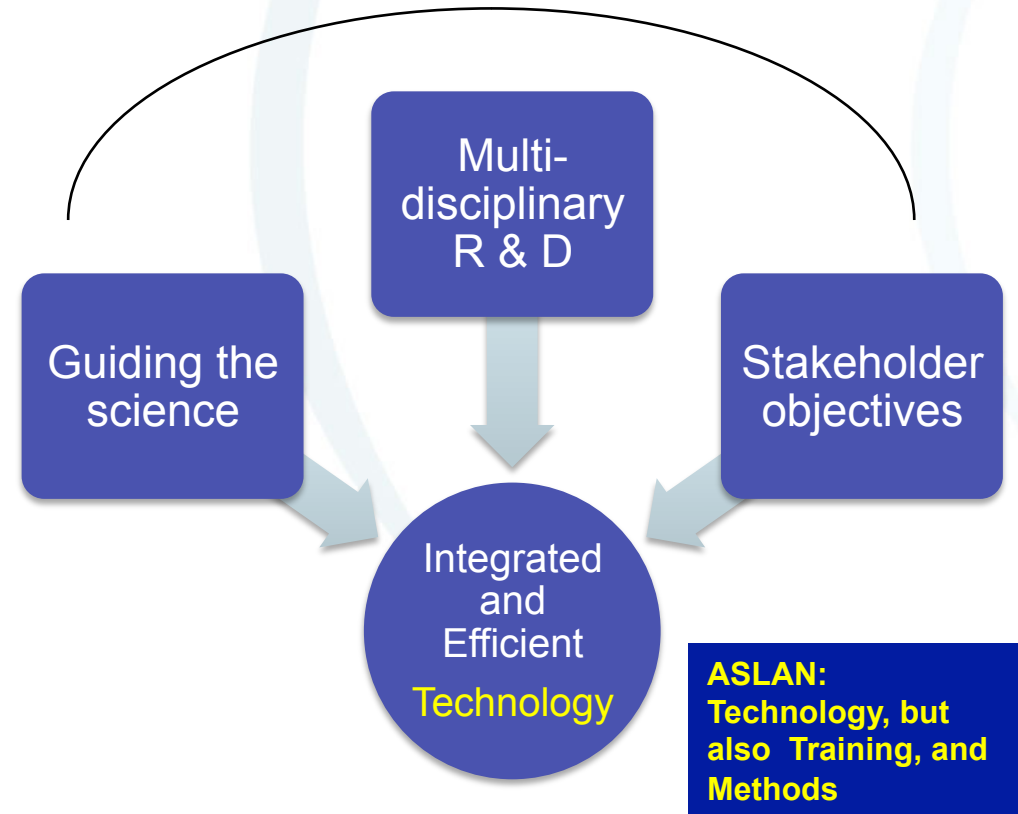
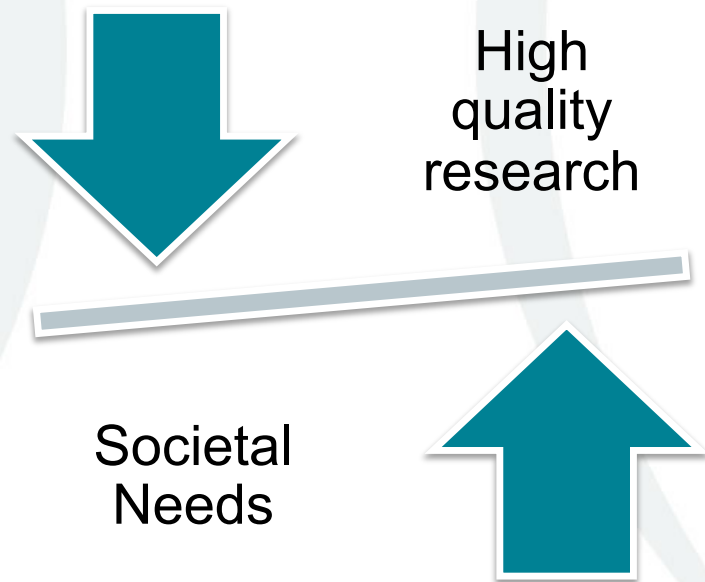
How can we understand and then support the finalized collaborative process?



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ELyT Global and the labex ASLAN

ASLAN White Paper : “Societal Impact of Research on the Complexity of Language in France, presented at the Science of Team Science conference in May 2019



ASLAN:
Technology, but
also Training, and
Methods



INSciTS

International Network for the Science of Team Science

Building the knowledge base
for effective team science

Context for ElyT workshop 2019

- Two parallel initiatives ask for funding from IDEXLYON : 2017/2018
 - Project of Knowledge Decision Confluence, inspired by the Decision Theatre at Arizona State University (PI: Kristine Lund)
 - Project of immersive visualization of data, inspired by the Center for Active Visualization in Earth Sciences (CAVES) at UC Davis (PI: Razvan Caracas)



Under the direction of François Pellegrino: Coordinateur Scientifique IDEXLyon



Identify LSE partners, get funding, build an international alliance

Structure the academic LSE site ; increase international visibility

- First elaborated in October 2017 within EduCoLa (Education Cognition, Language), as a transversal initiative of academic colleges :

- EduCola → **Réparer l'homme?**
– Kristine Lund
- Life Sciences and Health → **Réparer l'homme?**
– Guy Mouchiroud
- **Engineering and Technology** → **Réparer l'homme?**
– **Michel Lance**
- Literature, Languages, Philosophy
– Marina Mestre
- Law, Economy, and Management
– Jérôme Rive
- Formal Sciences and Nature
– Alfonso San Miguel
- Social Sciences
– Pascal Marty

Réparer l'homme?
29 sept. 2017 Villeurbanne (France)



La Neuro-immersion



Breakthrough Project:
Machine Learning & Data
Science for Complex and
Dynamical Models



ILLUSTRATIONS

✓ Arizona State University Decision Theater



✓ UC Davis KECKCAVES



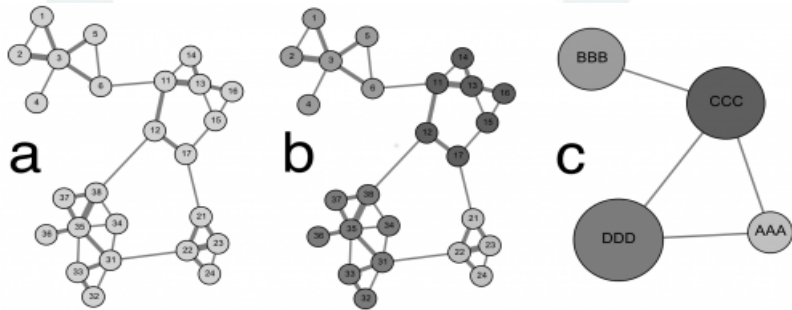
11 out of 12 labex obtained continued funding



- 60 000 € per labex “data representation, according to academic discipline” Human and Social Sciences labex: ASLAN, COMOD et IMU (complex systems approach)

Studying Science and the Science of Team Science

Scientometrics: the science of scientific publications

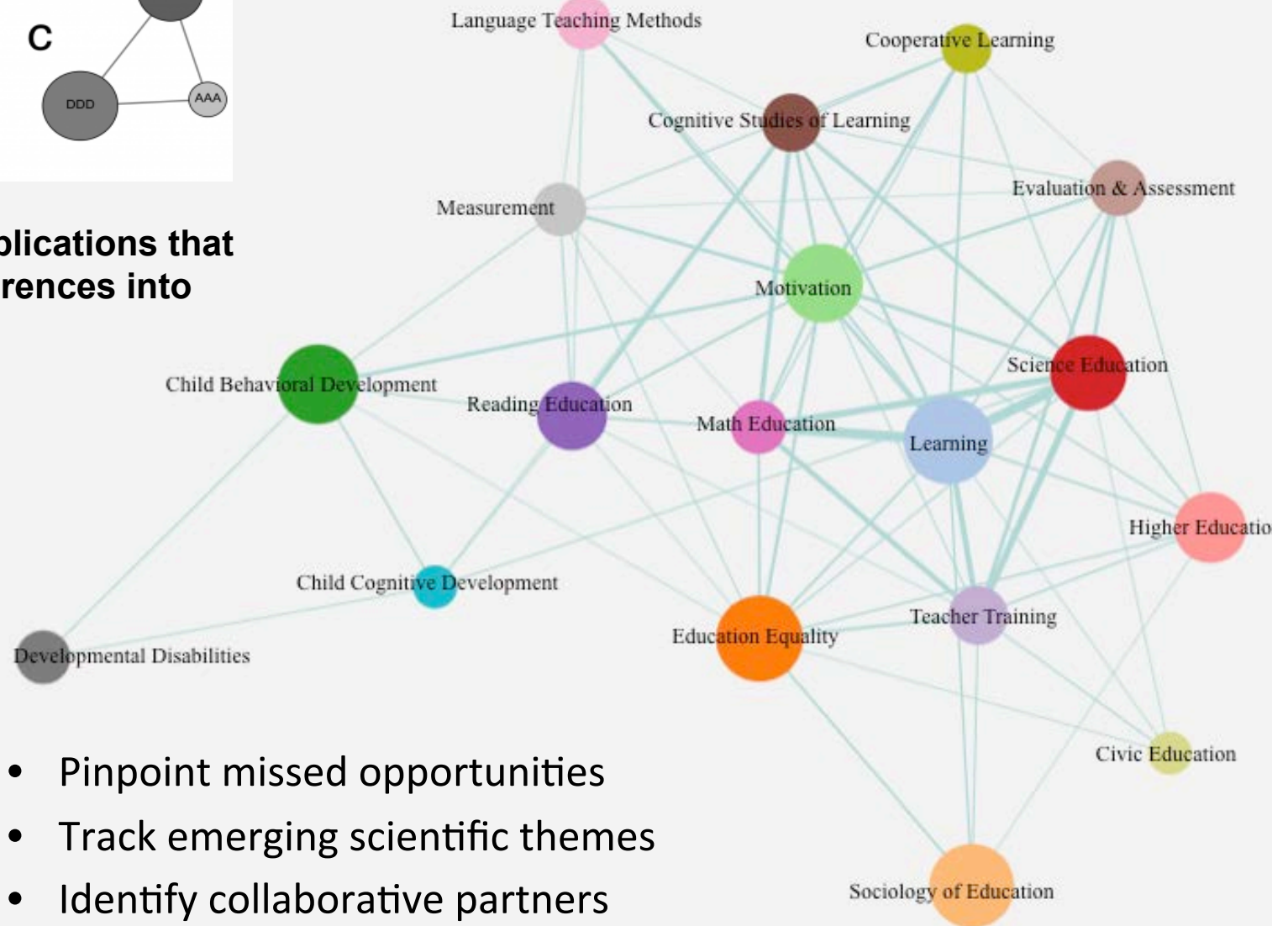


Group publications that share references into clusters

- Understand scientific practices and their development (Mingers & Leydesdorff, 2015)

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Lund, et al (2017) A Scientometric map of education research from the international Scopus database



- Pinpoint missed opportunities
- Track emerging scientific themes
- Identify collaborative partners

Objectives : Science of Team Science

***Université
cible !***

Do science within
interdisciplinary
teams

Implement *Lessons
Learned* about how to
do science in teams

Empirically analyze
how to do science in
teams

The challenges of Multi-inter-transdisciplinarity

Cross-disciplinary Collaboration

- (Uni)Disciplinary research
- Three **Cross-disciplinary** collaborative research orientations
 - Combine or integrate from more than one field
 - Concepts, Methods, and Theories
 - **Multidisciplinary**
 - Independent, Sequential, Divisional
 - Exchange
 - **Interdisciplinary**
 - Joint, Interactive, Partnership
 - Dialogue, Hybridization, Complementary
 - **Transdisciplinary**
 - Integrative, Interdependence, Emergence
 - Reciprocity, Discourse, Share Vocabulary, Extends

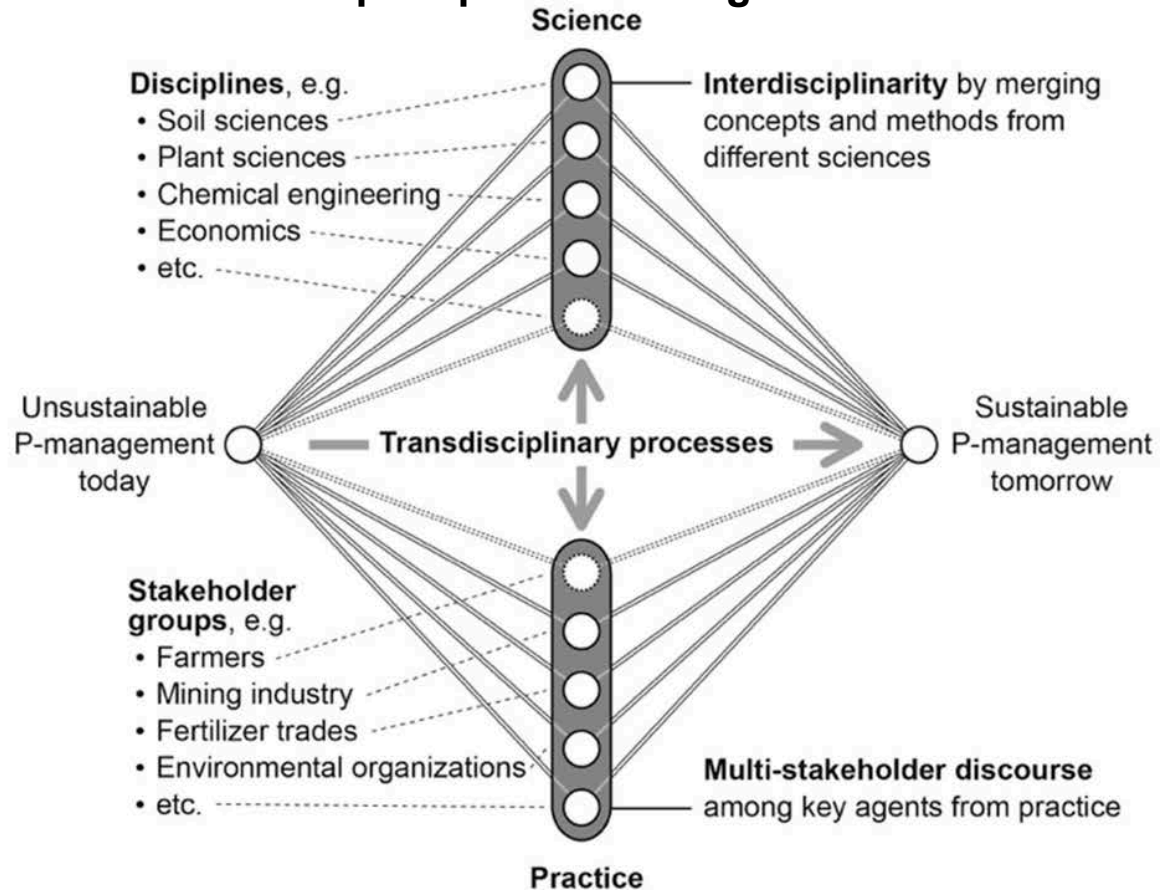


- Webinar by Holly Falk-Krzesinski

- Vice President, Strategic Alliances, Global Academic Relations at Elsevier
- Adjunct Lecturer, School of Professional Studies, Northwestern University.

- <https://i2insights.org>

A model for transitioning towards sustainable phosphorus management



A. A targeted interdisciplinary process

Interdisciplinary Executive Scientist

C. A facilitated td-process relating 1. and 2.

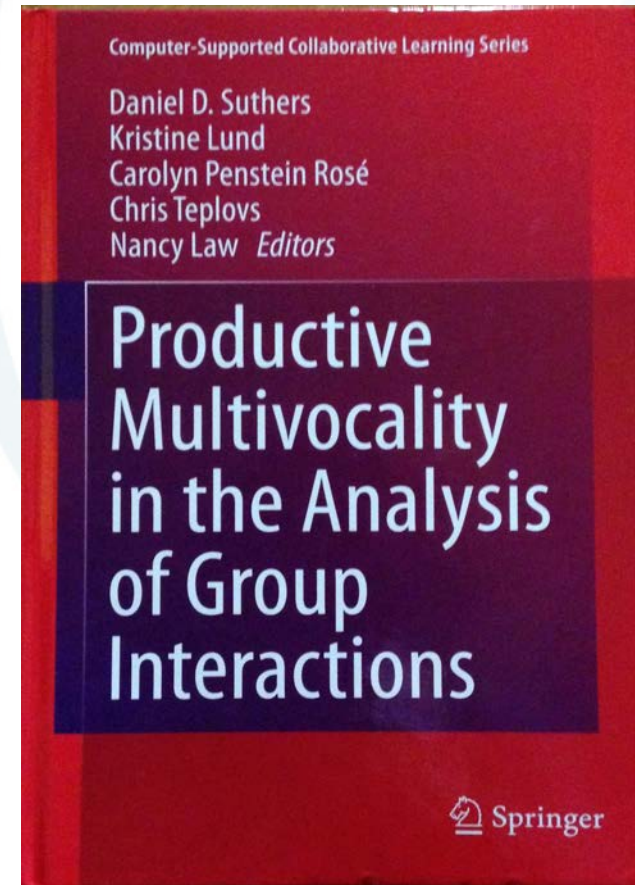
More than just a decision

B. A facilitated Multi-stakeholder discourse

Intervening in order to favor productive processes

Team Science *and* Science of Team Science

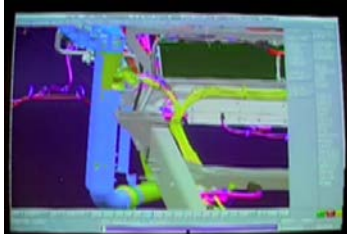
- Interdisciplinary results regarding the understanding of group interactions
 - education, psychology, computer science, information sciences, social sciences
- A collective reflection on how to avoid the pitfalls and harness the benefits of working across multiple traditions
 - <https://i2insights.org/2017/08/01/multivocal-analysis-avoiding-pitfalls/>
 - <https://i2insights.org/2017/08/03/multivocal-analysis-epistemological-engagement/>



In November 2017, the blog i2insights had + than 160 contributions by 189 contributors from 27 countries. Viewed more than 100,000 times, by readers in more than 160 countries.

Modeling Decision Making in Collaborative Design

Shared CAD Model



St Priest

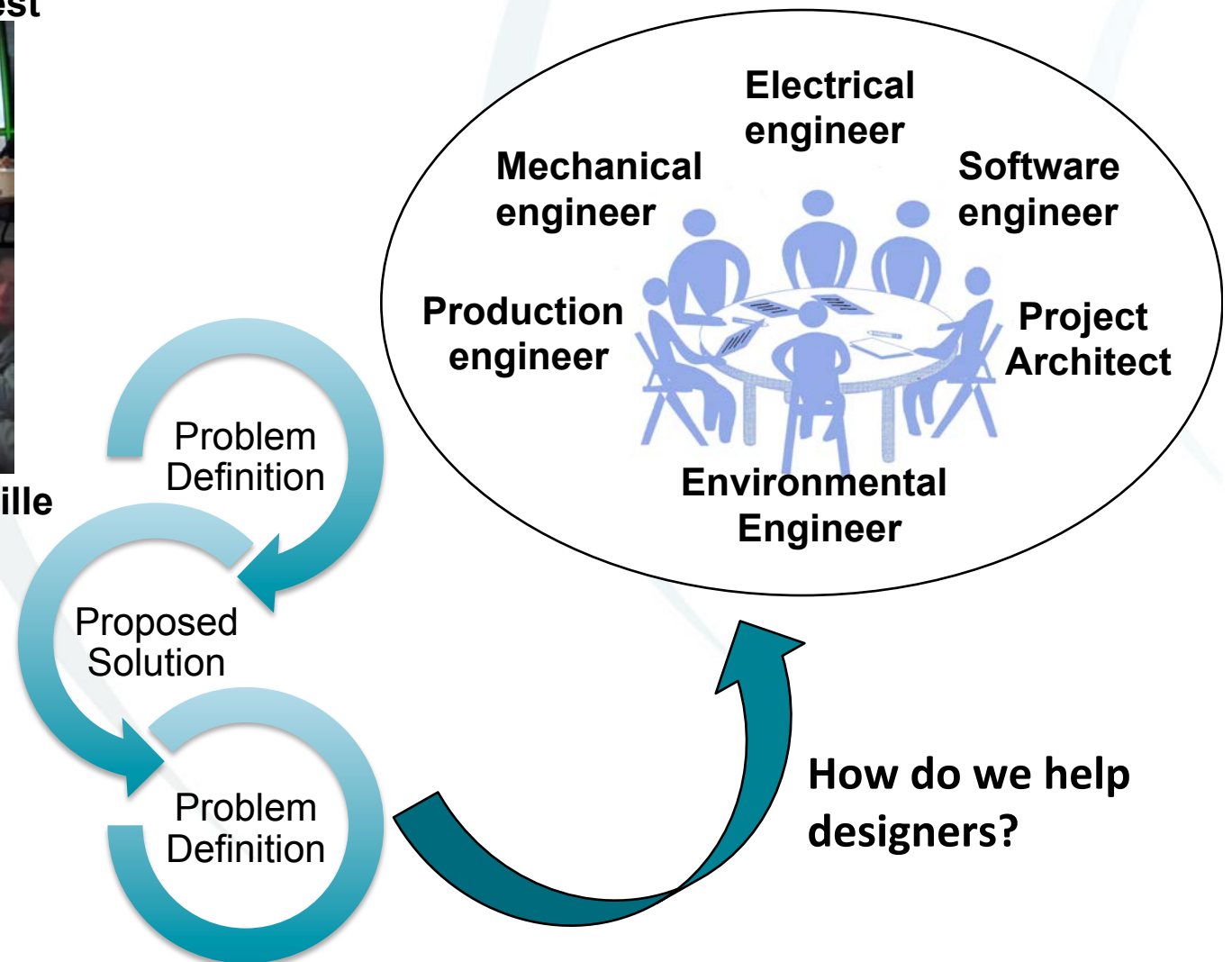


St Priest



Blainville

- Our analyses revealed **two types of pivotal moments for decision making** :
 - A pivotal moment for choice
 - A pivotal moment of emergence



Roadmap for moving forward : are you with us?

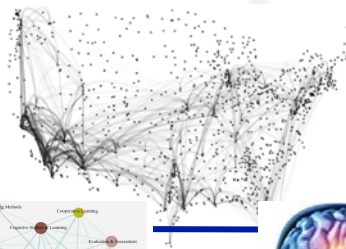
- Identify existing software and hardware platforms in Lyon-St. Etienne
- Establish a network of designers and users of these platforms
- Design a demonstrator for existing models, simulations, and visualizations
- Get funding and build international alliances



GRAND LYON
la métropole

Current proposed Domains

- Language Sciences
- Complex temporal and spatial trajectories
- Urban territories
- Neurosciences
- Scientific networks

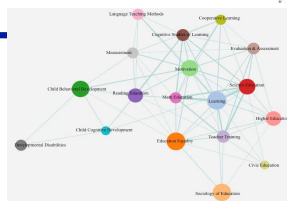


ElyT domains

- Health and aging population
- Energy dependence
- City and Natural / Industrial risks

Japan, but also Canada

Use Data
Science, AI, & Big
Data in.....
Energy, Urbanism,
Health & Societal
Issues



Thank-you for your attention!

ありがとうございます。
Arigatou gozaimasu.

Kristine.Lund@ens-lyon.fr