

# Update of LCIA methods and format

 Agroscope

 EMPA

 EPFL

 ETH

 PSI

ecoinvent v3 users meeting

Friday May 16<sup>th</sup> 2014

Guillaume Bourgault

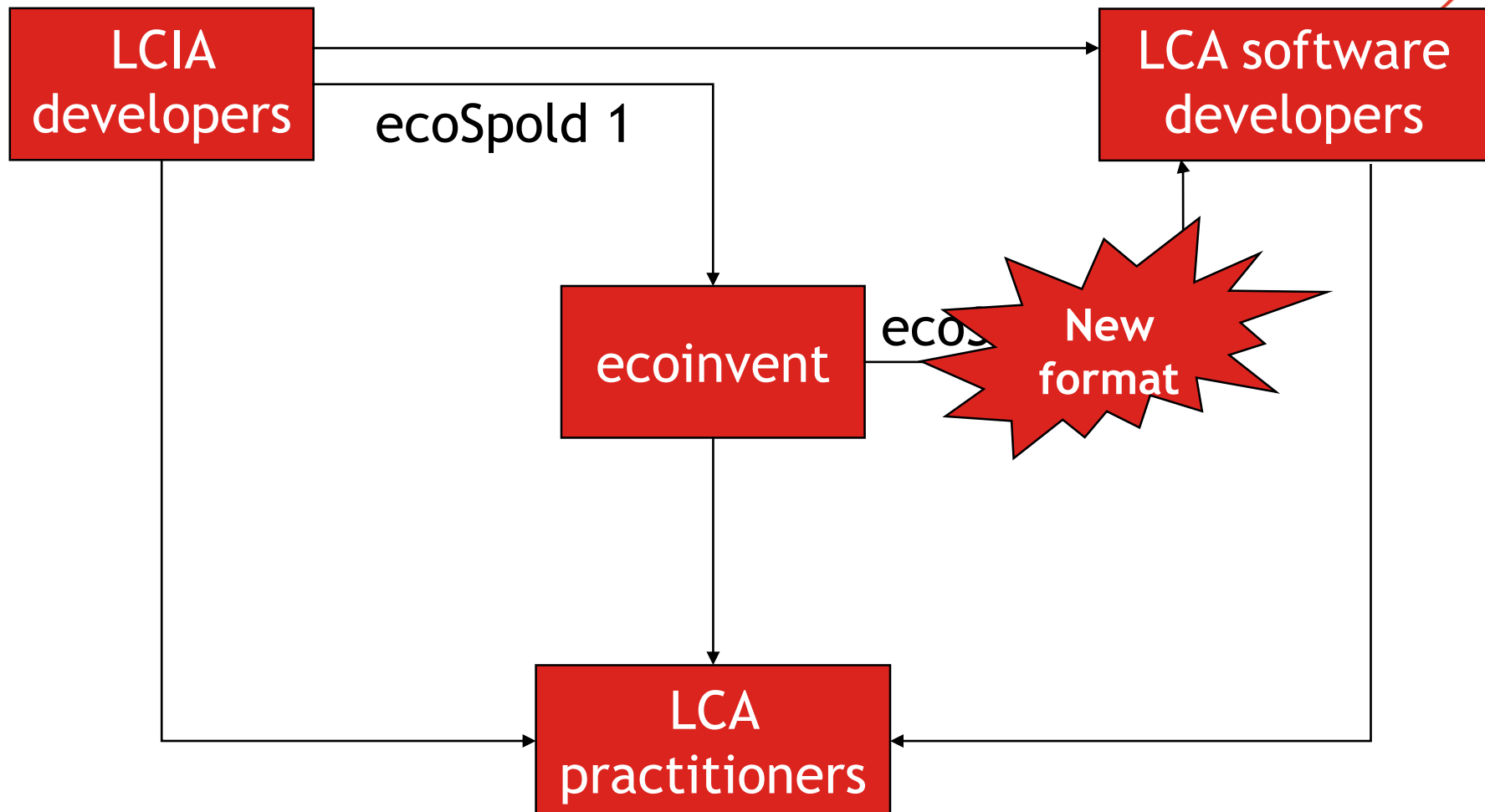
Project Manager



**ecoinvent**  
Centre

- Information flow
- New features
- Interaction with the new format
- Two new methods implemented

# Information flow



# New features

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- New format based on ecoSpold2:
  - ecoSpold2 includes all the features of ecoSpold1
  - Reference to UUID of elementary exchanges
  - Synonyms
  - Comment and source for each CF
  - Uncertainty, with comments
  - Regionalised impact assessment
  - Parameters and mathematical relationships

# New features

- Regionalised impact assessment:
  - Each CF has geographic information
  - List of countries
  - Customisable geographies



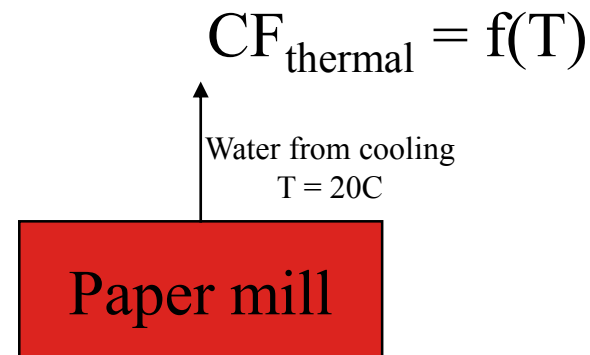
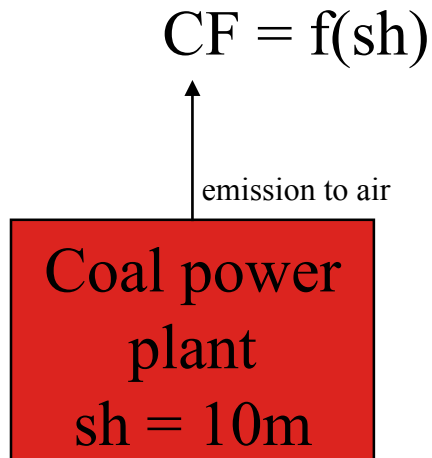
# New features

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- Parameters and mathematical relationships:
  - ▶ CFs are expressed as formula instead of a value
  - ▶ Parameters are defined and used as variables in a mathematical relationship
  - ▶ Parameters can have uncertainty
  - ▶ Example: human exposure to pesticide through crop ingestion

# New features

- Parameters and mathematical relationships:
  - Formulas can refer to parameters not belonging to the method



# Interacting with the new format

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- xml files are not user friendly:
  - Hard to read
  - Hard to edit

# Interacting with the new format

ecoEditor for ecoinvent version 3

File Edit View Extras Help

Activity Description Modelling and Admin... Exchanges Exchange Properties Parameters Tasks

Add Remove Column Layouts: Amount Only Compact Extended Customize Current Column Layout... Reset Column Layout

Exchange					gold production, GLO 2006							
Type	Name	Unit	Compartment	Subcompartment	Amount	Variable Name	Mathematical Relation	Comment	Uncertainty	Annual Production Volume	Production Volume Variable Name	Production Volume Comment
0 - Refere...	gold	kg			1					2,167E+06		USGS
2 - ByPro...	sulfidic tailing, off-site	kg			1,1161E+06			(3,3)	Log...	2,4187E+12		Calculat
4 - ToEnvi...	Antimony	kg	air	non-urban air o...	0,15771			(3,4)	Lognor...			
4 - ToEnvi...	Arsenic	kg	air	non-urban air o...	0,035538			(3,3)	Lognor...			
4 - ToEnvi...	Arsenic, ion	kg	water	ocean	0,00056302			(1,3)	Lognor...			
4 - ToEnvi...	Arsenic, ion	kg	water	surface water	0,031084			(3,4)	Lognor...			
4 - ToEnvi...	Beryllium	kg	air	non-urban air o...	0,0032172			(3,3)	Lognor...			
4 - ToEnvi...	Cadmium	kg	air	non-urban air o...	0,00017045			(3,3)	Lognor...			
4 - ToEnvi...	Cadmium, ion	kg	water	ocean	0,00012938			(1,3)	Lognor...			
4 - ToEnvi...	Cadmium, ion	kg	water	surface water	0,013368			(3,4)	Lognor...			
4 - ToEnvi...	Carbon dioxide, fossil	kg	air	non-urban air o...	41,19			(3,3)	Lognor...			
4 - ToEnvi...	Chromium	kg	air	non-urban air o...	0,027583			(3,3)	Lognor...			
4 - ToEnvi...	Cobalt	kg	air	non-urban air o...	0,0047849			(3,3)	Lognor...			
4 - ToEnvi...	Copper	kg	air	non-urban air o...	1,5998E-05			(2,4)	Lognor...			
4 - ToEnvi...	Copper, ion	kg	water	ocean	0,0015401			(1,3)	Lognor...			
4 - ToEnvi...	Copper, ion	kg	water	surface water	0,24914			(3,4)	Lognor...			
4 - ToEnvi...	Cyanide	kg	water	ocean	0,0033995			(1,3)	Lognor...			
4 - ToEnvi...	Cyanide	kg	water	surface water	0,49305			(3,4)	Lognor...			
4 - ToEnvi...	Lead	kg	air	non-urban air o...	0,0079462			(3,3)	Lognor...			
4 - ToEnvi...	Lead	kg	water	ocean	0,00028195			(3,4,2,1,3,3):	Environmental report			
4 - ToEnvi...	Lead	kg	water	surface water	0,80545			(3,4)	Lognor...			
4 - ToEnvi...	Manganese	kg	air	non-urban air o...	0,15001			(3,3)	Lognor...			
4 - ToEnvi...	Mercury	kg	air	non-urban air o...	0,043599			(3,3)	Lognor...			
4 - ToEnvi...	Mercury	kg	water	ocean	1,6061E-06			(1,3)	Lognor...			
4 - ToEnvi...	Mercury	kg	water	surface water	0,014831			(3,4)	Lognor...			
4 - ToEnvi...	Nickel, ion	kg	water	ocean	0,0019015			(1,3)	Lognor...			
4 - ToEnvi...	Nickel, ion	kg	water	surface water	0,15515			(3,4)	Lognor...			
4 - ToEnvi...	Selenium	kg	air	non-urban air o...	0,087599			(3,3)	Lognor...			
4 - ToEnvi...	Water	m3	air	unspecified	28,251			Cal	Lognor...			
4 - ToEnvi...	Water	m3	water	unspecified	160,09			Cal	Lognor...			
4 - ToEnvi...	Zinc	kg	air	non-urban air o...	4,4166E-06			(2,4)	Lognor...			
4 - ToEnvi...	Zinc, ion	kg	water	ocean	0,00075575			(1,3)	Lognor...			
4 - ToEnvi...	Zinc, ion	kg	water	surface water	1,4777			(3,3)	Lognor...			
4 - FromE...	Gold, Au 1.4E-4%, in ore, in ground	kg	natural reso...	in ground	0,29551			(3,3)	Lognor...			
4 - FromE...	Gold, Au 4.3E-4%, in ore, in ground	kg	natural reso...	in ground	0,057677			(3,3)	Lognor...			
4 - FromE...	Gold, Au 4.9E-5%, in ore, in ground	kg	natural reso...	in ground	0,28929			(3,3)	Lognor...			
4 - FromE...	Gold, Au 6.7E-4%, in ore, in ground	kg	natural reso...	in ground	0,30857			(3,3)	Lognor...			
4 - FromE...	Gold, Au 7.1E-4%, in ore, in ground	kg	natural reso...	in ground	0,14287			(1,3)	Lognor...			
4 - FromE...	Water, river	m3	natural reso...	in water	135,77			(3,3)	Lognor...			
4 - FromF...	Water well in around	m3	natural reso...	in water	115,85			(3,3)	Lognor...			

User: trainee\_ecoinvent

# Interacting with the new format

- xml files are not user friendly:
  - Hard to read
  - Hard to edit

## LCI data

Lots of data suppliers

High volume of information

Yearly update

Well defined needs



ecoEditor  
software

## LCIA methods

Reduced number of suppliers

Lower volume of information

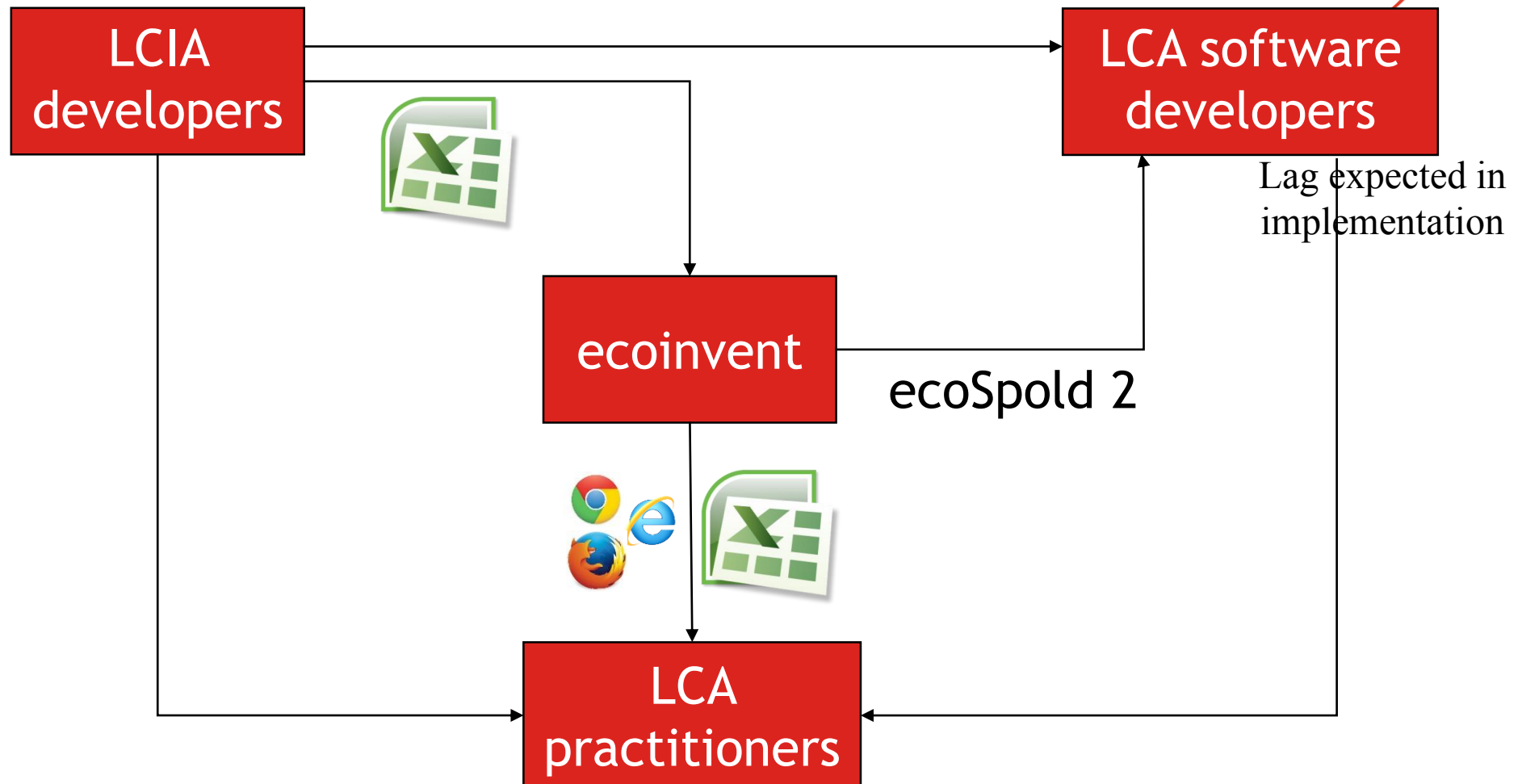
Less frequent updates

Evolving needs



Management  
by human

# Interacting with the new format



# New method implementation

- IPCC2013: GWP 20 and 100 years
- Ecological scarcity 2013

Carcinogenic substances into air	Non radioactive waste to deposit
Energy resources	Ozone layer depletion
Global warming	Pesticides into soil
Heavy metals into air	POP into water
Heavy metals into soil	Radioactive substances into air
Heavy metals into water	Radioactive substances into water
Land use	Radioactive waste to deposit
Main air pollutants and PM	Water pollutants
Mineral resources	Water resources

# Take home message

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- Increased flexibility for LCIA method developers
- More thorough and transparent communication
- New methods implemented

# Thank you for your interest in ecoinvent version 3!

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## Guillaume Bourgault

Project Manager  
**ecoinvent**

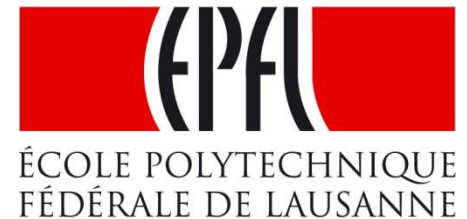
✉ [bourgault@ecoinvent.org](mailto:bourgault@ecoinvent.org)



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