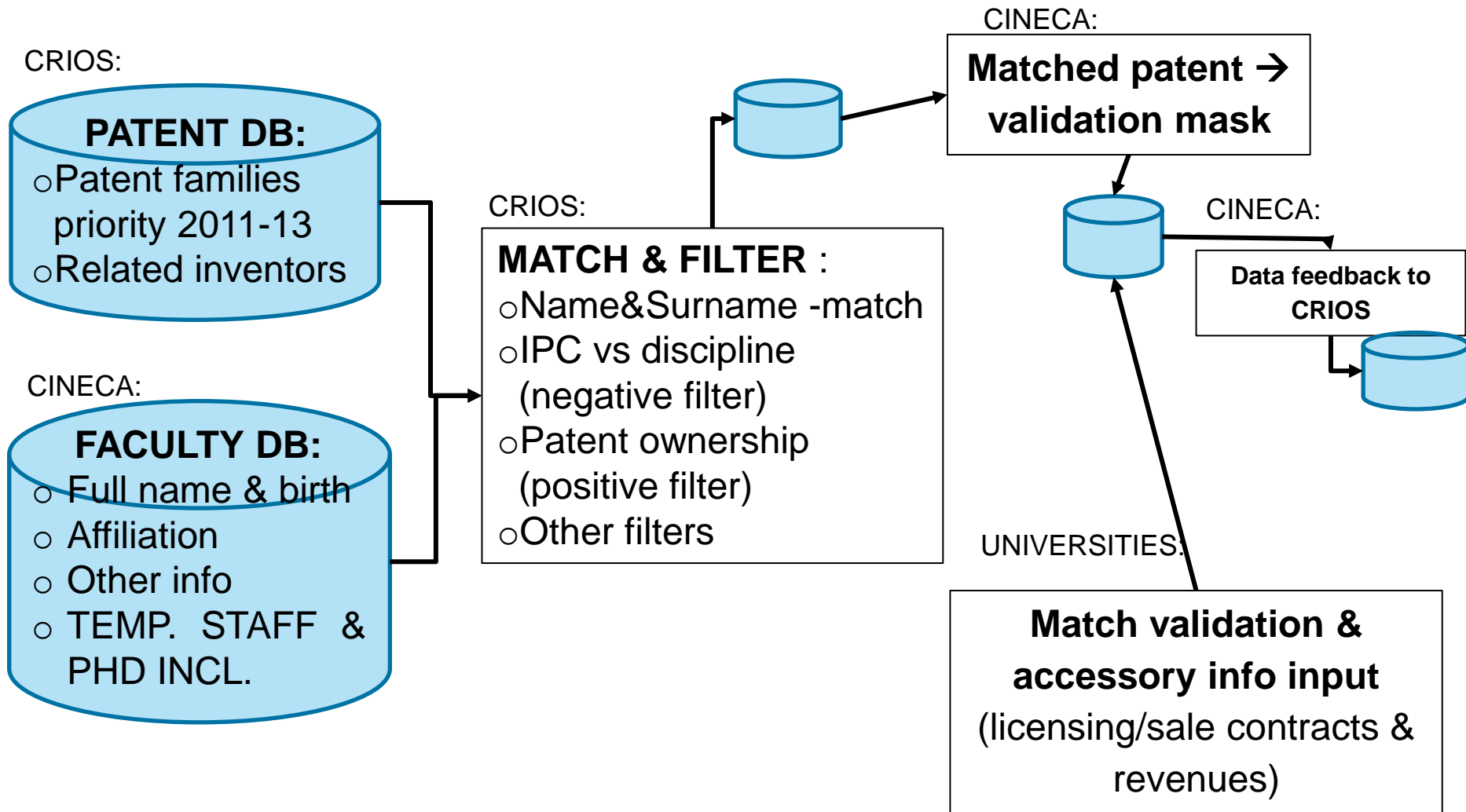


PATENTING EVALUATION (SUA-RD 2014) – CRIOS-CINECA project workflow



T2. - Validation results (inventor-patent pairs) (march 2015)

	nr patents	% on total	% on tot. answers
No answer	1986	48.0%	--
No, faculty is not inventor	896	21.7%	41.7%
Yes, faculty is inventor	1253	30.3%	58.3%
<i>Total answers</i>	2149	52.0%	100.0%
Total	4135	100.0%	

T 3. – Validation results (inventor-patent pairs), by discipline (march 2015)

Discipline	% on total			% su validate	
	no	si	n.a.	no	si
n.a.	9.9%	1.4%	88.7%	87.5%	12.5%
1 Math & Informatics	28.2%	5.6%	66.3%	83.5%	16.5%
2 Physics	22.4%	20.2%	57.3%	52.6%	47.4%
3 Chemistry	19.9%	43.8%	36.3%	31.3%	68.7%
4 Geosciences	34.0%	7.0%	59.0%	82.9%	17.1%
5 Biology	21.3%	28.0%	50.6%	43.2%	56.8%
6 Medical sciences	15.1%	14.0%	70.9%	52.0%	48.0%
7 Agrarian & Veterinarian	26.3%	19.3%	54.4%	57.6%	42.4%
8 Civil engineering	27.5%	18.2%	54.3%	60.1%	39.9%
9 Industrial and electric engineer.	19.6%	39.9%	40.6%	32.9%	67.1%
13 Economcis and statistics	--	--	100.0%	--	--

Veugelers – 3rd mission beyond tech transfer model

- LONGSTANDING call for shifting emphasis AWAY FROM markets for technologies & (faculty's) entrepreneurship TO students' role as carriers of knowledge
- › Students' entrepreneurship (Colombo)
 - › Students' employment in industry → innovation
- } Students' « mobility »

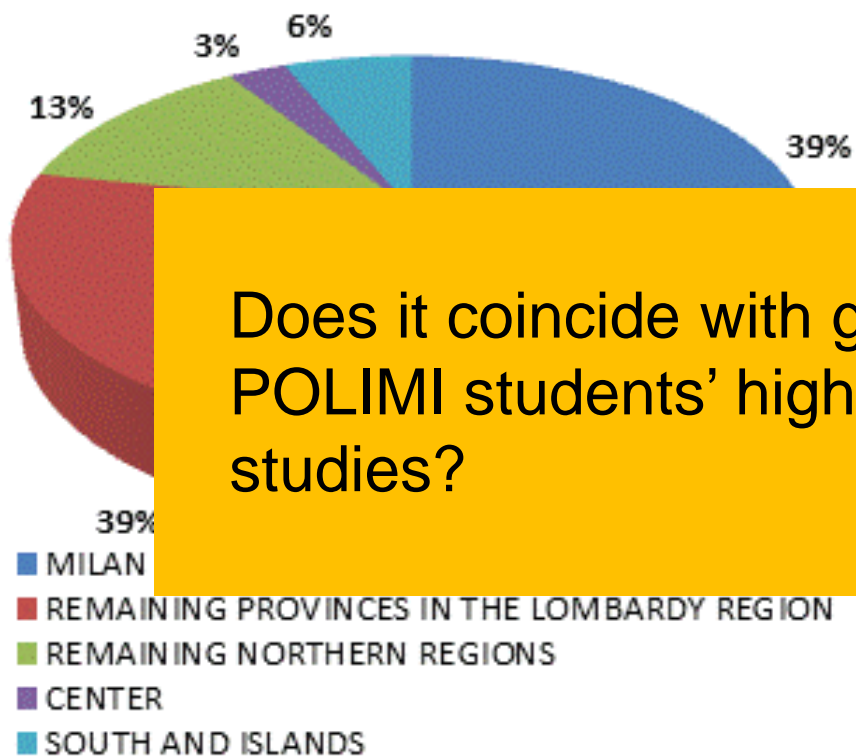
→ WHY THEN have we made so little progress?

- › **Theoretical issue:** education as *knowledge acquisition* vs *signalling* → does university provide students with knowledge or it just help matching them to demand (through signal)?
- › **Empirical issue:** endogeneity of students' curricular choices / effort & innovation/entrepreneurship outcome [how to control for students' fixed effects? → issues in Colombo's paper]
- › **Policy problem:** students' mobility has a geographical dimension → next slide

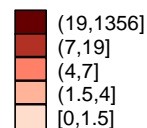
Veugelers – 3rd mission beyond tech transfer model

- Geographical dimension of students' mobility :
 - › Indirect: from lower to higher degrees
 - › Direct: at the end of education
 - Even if direct mobility is low, indirect is not (esp. for S&T degrees; see work by Paula Stephan; check POLIMI's data ▶)
 - **When does mobility become migration?** Intra-national or inter-national
 - How to evaluate high school/universities that feed non-local mobility?
 - How to incentivize/compensate local communities hosting/supporting these high school/universities?
 - **The paradox of entrepreneurship** : it is most often local (Sorenson et al.) → a substantive (non methodological reason) historical interest in it: university as key to local development → would mobility be the same? what mobility are we talking about?

Geographic distribution of POLIMI student start-ups



Does it coincide with geographic distribution of POLIMI students' high school / undergraduate studies?



Veugelers – 3rd mission beyond tech transfer model

→ Other geographical dimensions :

› Universities' (and university hospitals') other local effects

- Providers of skilled workers for (eminently local) public administration (PA)
→ how much innovation (diffusion) in local PA owes to universities?
- (Often sole) employers of high skilled workers → what overall productivity impact through civic engagement?
- Demander of high-end services: are they locally sourced?
- INDUSTRY → UNIVERSITY technology transfer: faculty transmit to students novelties from industry (intuition: key role in IT and mechanical & civil engineering and wherever university IS NOT the top invention engine)

› How much the local/non-local effects interact?

- Does good provision of local high-skilled workforce requires also providing non-local one?

→ From “productivity” indicators to “relational indicators”:

- › University as gate towards industry / geographical mobility
- › University as end receiver of knowledge (from industry) and high-end services