101 INNOVATIONS IN SCHOLARLY COMMUNICATION
THE CHANGING RESEARCH WORKFLOW

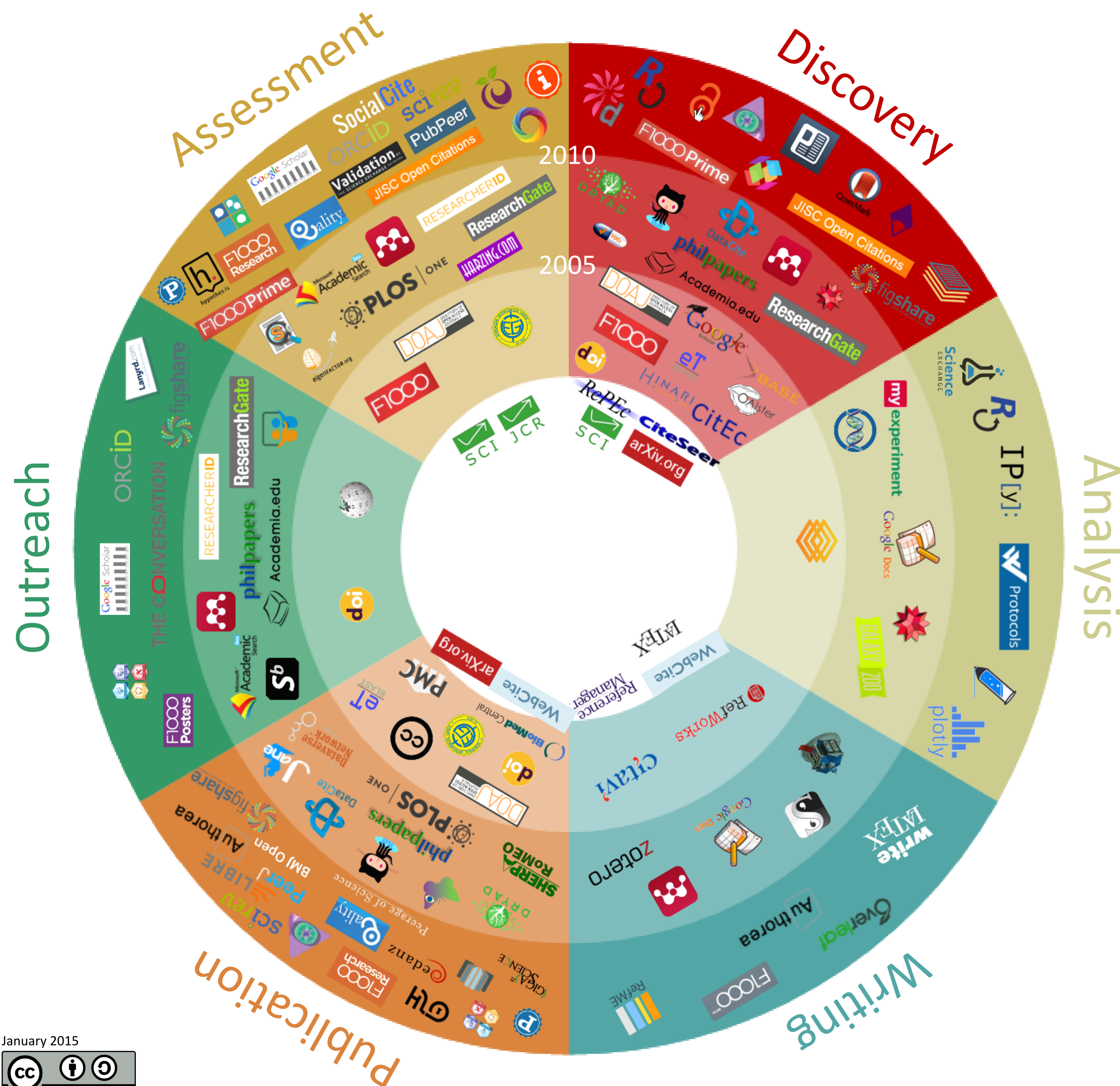*Jeroen Bosman* @jeroenbosman
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Science is in transition. This poster gives an impression of the exploratory phase of a project aiming to chart innovation in scholarly information and communication flows from evolutionary and network perspectives.

We intend to address the questions of what drives innovation and how these innovations change research workflows and may contribute to more **open, efficient** and **good** science.

101 Innovative tools and sites in 6 research workflow phases (< 2000 - 2015)

Assessment · Discovery · Analysis · Writing · Publication · Outreach

2010 · 2005

January 2015

Most important developments in 6 research workflow phases

	Discovery	Analysis	Writing	Publication	Outreach	Assessment
Trends	social discovery tools	datadriven & crowdsourced science	collaborative online writing	Open Access & data publication	scholarly social media	article level (alt)metrics
Expectations	growing importance of data discovery	more online analysis tools	more integration with publication & assessment tools	more use of "publish first, judge later"	use of altmetrics for monitoring outreach	more open and post-publication peer review
Uncertainties	support for full-text search and text mining	willingness to share in analysis phase	acceptance of collaborative online writing	effect of journal/publisher status	requirements of funders & institutions	who pays for costly qualitative assessment?
Opportunities	discovery based on aggregated OA full text	open labnotes	semantic tagging while writing/citing	reader-side paper formatting	using repositories for institutional visibility	using author-, publication- and affiliation-IDs
Challenges	real semantic search (concepts & relations)	reproducibility	safety/privacy of online writing	globalization of publishing/access standards	making outreach a two-way discussion	quality of measuring tools

	Discovery	Analysis	Writing	Publication	Outreach	Assessment
Most important long-term development	multidisciplinary + citation-enhanced databases	collaboration + data-driven	online writing platforms	Open Access	more & better connected researcher profiles	importance of societal relevance + non-publication contributions
Potentially most disruptive development	semantic/concept search + contextual/social recommendations	open science	collaborative writing + integration with publishing	circumventing traditional publishers	public access to research findings, also for agenda setting	moving away from simple quantitative indicators

Typical workflow examples

	Discovery	Analysis	Writing	Publication	Outreach	Assessment
Traditional	Web of Science	SPSS	Endnote 7	nature	RESEARCHERID	Journal Citation Reports
Modern	Google Scholar	R	RefWorks	arXiv.org / PLOS ONE	Institutional Repository	eigenFACTOR.org / PLOS
Innovative	Mendeley	Zooniverse	Authorea	figshare / PeerJ	ResearchGate / ORCID	Peerage of Science / Altmetric
Experimental	Sparrho / pi	ROpenSci / IPy:Nb	Overleaf / Docear	WINNOWER		PubPeer
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