HARNESSING THE POWER OF COLLECTIVE INTELLIGENCE: COMMUNITIES & TECHNOLOGIES

Catalyst

catalyst-fp7.eu

On behalf of the CATALYST consortium.

Contributors:
Marta Arniani, Sigma Orionis
Alberto Cottica, Wikitalia
Anna De Liddo, Open University
Lee-Sean Huang, Purpose
Marc-Antoine Parent, Imagination for People
Rosa Strube, CSCP
Yannis Treffot, Sigma Orionis

Pictures: **Valentina Sommariva**

WWW.CATALYST-FP7.EU

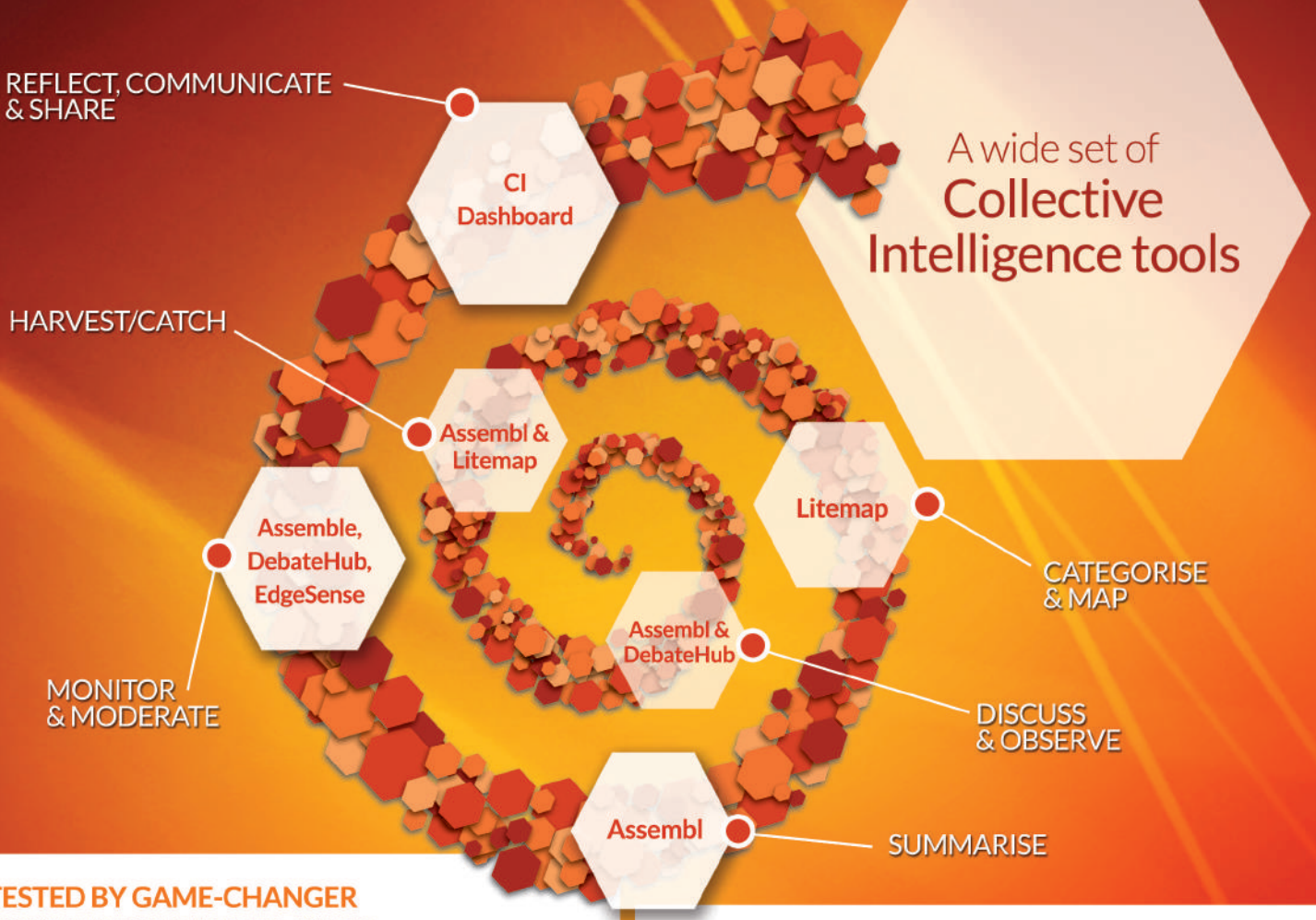
The CATALYST project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n°6611188

TABLE OF CONTENTS

5		**EXECUTIVE SUMMARY**
7	1	**FOSTERING COLLECTIVE INTELLIGENCE**
7	1.1	The aggregation approach
8	1.2	The co-creation approach
11	1.3	The CATALYST vision
12	1.4	Tools applied to Collective Intelligence
15	1.5	Collective Intelligence in practice
15	1.5.1	Case study 1 - Collective Intelligence for educassion: Online discussion with students
16	1.5.2	Case study 2 - Preparing the OECD Forum: online discussion on youth well-being
20	1.5.3	Feedbacks from testing communities
23	**2**	**CATALYST METHODOLOGY: ITERATIVE TEST AND DEVELOPMENT**
24	2.1	Technical lessons learnt
25	2.2	Methodological lessons learnt
25	2.3	Typology of communities and community processes
29	**3**	**R&D IN COLLECTIVE INTELLIGENCE: RECOMMENDATIONS FOR FUTURE COMMUNITIES AND TECHNOLOGIES**
29	3.1.1	Promoting debate as a value and a behaviour
29	3.1.2	Securing tighter alignement of Collective Intelligence tools and communities
30	3.1.3	Key success factors
30	3.2	Uptake vs. extension
33		**CONCLUSIONS**

Catalyst

In a nutshell ...



A wide set of **Collective Intelligence tools**

TESTED BY GAME-CHANGER COMMUNITIES AND PLAYERS

ASHOKA · EDGE RYDERS · LOOMIO · INNOVATORI PA · OUISHARE · UTOPIA · OECD

TO TACKLE KEY CHALLENGES AND IMPROVE COLLABORATION

Topics tackled:

- Youth well-being
- Community management
- PA innovation
- Reimagine learning
- Collaborative economy
- FabLabs coordination

SIGMAORIONIS · imagination for people · cscp · University of Zurich[UZH] · The Open University · PURPOSE

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n°**6611188**

www.catalyst-fp7.eu

EXECUTIVE SUMMARY

In recent years the increasing diffusion of online dialogue spaces has made the Web a place where the ideas and opinions of many people can be shared, expanded and equally endorsed or criticised by a number of individuals that sees no precedents in human history. When applied to societal challenges and problems, the Web's potential of connecting people ideas has facilitated the rise of movements of different nature such as #BlackLivesMatter, Podemos and the Arab Spring. Nonetheless, not only the quality of online dialogue is hampered by a series of factors (i.e. arbitrary interpretations diffused as facts, trolls), but also under the very definition of online dialogue (discussion, debate) can fit many forms of ideas sharing that aren't based on a real and reciprocal interaction among users.

The purpose of the CATALYST project, whose major results and lessons learnt are presented in this document, has been to facilitate online debate and deliberation, thus improving their quality and effectiveness. CATALYST's approach in doing so has been pulling together first-class tools, serving Collective Intelligence purpose, and establishing a collaboration between their authors and communities (with a social innovation goal) that could apply them in their activities. Some of these communities were part of the project from the very beginning, and have been central in shaping the tools; others were recruited through an open call. A regular feedback loop where communities came back with valuable observations and suggestions on their experience allowed the improvement of the tools towards a more user-friendly and impactful functioning.

The process led to key findings suitable to be further explored in future research projects and communities organisation under many lenses: technology development, online social behaviour analysis and orientation, R&D policies, creation of new communities. Social technologies, and especially working with and for communities, is still something whose implementation has to be fine-tuned with constant attention to communities' needs and behaviour. As anticipated above, current conceptions of online communities and debates can be distorted by social media dynamics, suffer the lack of a realistic consideration of engagement, and still have to find a right balance between technology and communities, where this dichotomy is ceased in favour of a seamless co-creation.

This document presents the theoretical approaches of Collective Intelligence studied by the CATALYST consortium and its vision used to create its tools, the project methodology and lessons learnt, and the recommendations for future communities and technologies in terms of Collective Intelligence R&D.

This document consists in a concise summary of the activities performed within the project. We invite researchers to go through the publications available on our website, and communities to contact the CATALYST partners for further information on the tools developed within the project.

The CATALYST project contributed in making Collective Intelligence less ethereal, in the belief that online debate and deliberation are at their very first moves and that a big potential for future societies resides in its improvement.

CATALYST (2013 - 2015) was funded by the European Union's 7th Framework Programme (FP7) under the CAPS (Collective Awareness Platforms for Sustainability and Social Innovation) initiative. CAPS are expected to support environmentally aware, grassroots processes and practices to share knowledge, to achieve changes in lifestyle, production and consumption patterns, and to set up more participatory democratic processes.

1

FOSTERING COLLECTIVE INTELLIGENCE

Collective Intelligence (CI) is nowadays hype. Since the diffusion of the web, social media and the networked society CI is seen as that emerging phenomenon which promises to produce some form of intelligent skills or behaviours out of many different forms of complexity – information, social, technical, political, economical complexity – by leveraging on a collective of people (and in some domains a mix of people and machines).

CI is found in multiple disciplines such as sociology, political science, computer and web science, decision-making, economics and even biology. It does not surprise then, if when faced with the question: "What is Collective Intelligence?" we are presented with many different and sometime even contradictory answers.

Focusing on the web and networked ICTs (Information and Communication Technologies) as main CI enablers, certain definitions are more appropriate than others to describe Collective Intelligence. In these contexts we can distinguish two main CI approaches: The "aggregation" approach and the "co-creation" approach.

1.1 The aggregation approach

Widely the most diffused CI approach, the aggregation approach refers to CI which is generated by machine aggregation of networked but isolated human intelligence. CI tools (Malone et al. 2009) capture online users contributions and then aggregate them to produce improved understanding of the environment and to lead to more intelligence decisions and actions. There are, for example, many successful CI tools from the IT business and e-commerce sector i.e. use users' 'traces' to create users profile and suggest user actions based on these profiles (e.g. Amazon, Youtube and LastFM).

Different forms of crowdsourcing, crowdfunding and crowdtesting can be also considered as CI processes, which fall under the aggregation approach. In these cases, a wider challenge or work task is parcelled in micro-tasks that are then allocated to a crowd. Crowd members carry on their work in isolation and then the system meaningfully aggregates crowd's results in order to bring needed ideas, solutions, services or products, that would be otherwise too difficult or expensive to obtained by a single person, group or organisation.

Some systems for collective ideation, which include no co-creation space for ideas can be also defined as CI processes, which fall under the aggregation approach. Most ideation systems in fact crowdsource idea generation to a large constituency. Each member of the constituency can propose single handedly created ideas. The system then follows different CI mechanisms for the assessment of each idea, which may also require other forms of individual expression of judgements or opinion from the crowd (commenting, voting, rating, ranking different ideas etc). From the aggregation of these individual users' activities the system then can filter the winning ideas.

Prediction markets are another type of CI processes, which follows an aggregation principle. Single user predictions by a large number of people are aggregated to predict future events. Crowds' predictions have proved to outperform expert predictions and they come to a much smaller expenses.

All these systems have proved extremely successful in mobilising crowds to solve a wide range of issues such as: predicting price of a product or commodity, promoting sale of new products, widening products demand and outreach, product innovation, design contests, promoting trades etc.

Nonetheless these systems leave little or no space for crowd's idea improvements and are not suited to support co-creation of ideas. Also they do not require any group awareness or collective understanding of the problems at hand and therefore do not support social awareness, on the contrary they often demand that users act in isolation in order to prevent different forms of social influences and biases.

For this reasons an aggregation approach is less suitable when the overall goal of a Collective Intelligence process is the improvement of various forms of societal awareness and civic intelligence.

1.2 The co-creation approach

CI processes can be also used to support users to collectively understand and address more conceptual and controversial problems, such as policy-making, environmental management and social issues of all sorts (De Liddo and Buckingham Shum 2010). These tools though rely on constitutively difference principles than the CI systems presented above, they require a higher level of awareness and engagement of users and fall under what we defined the CI co-creation approach.

In a co-creation approach CI is generated by small to large scale communities, which work together, in mutual awareness and toward a collective goal, rather than being generated by the simple networking and aggregation of large number of activities performed by individuals, who may not even be aware of each other actions. This unawareness/awareness condition is the fundamental difference between aggregation and co-creation CI approaches.

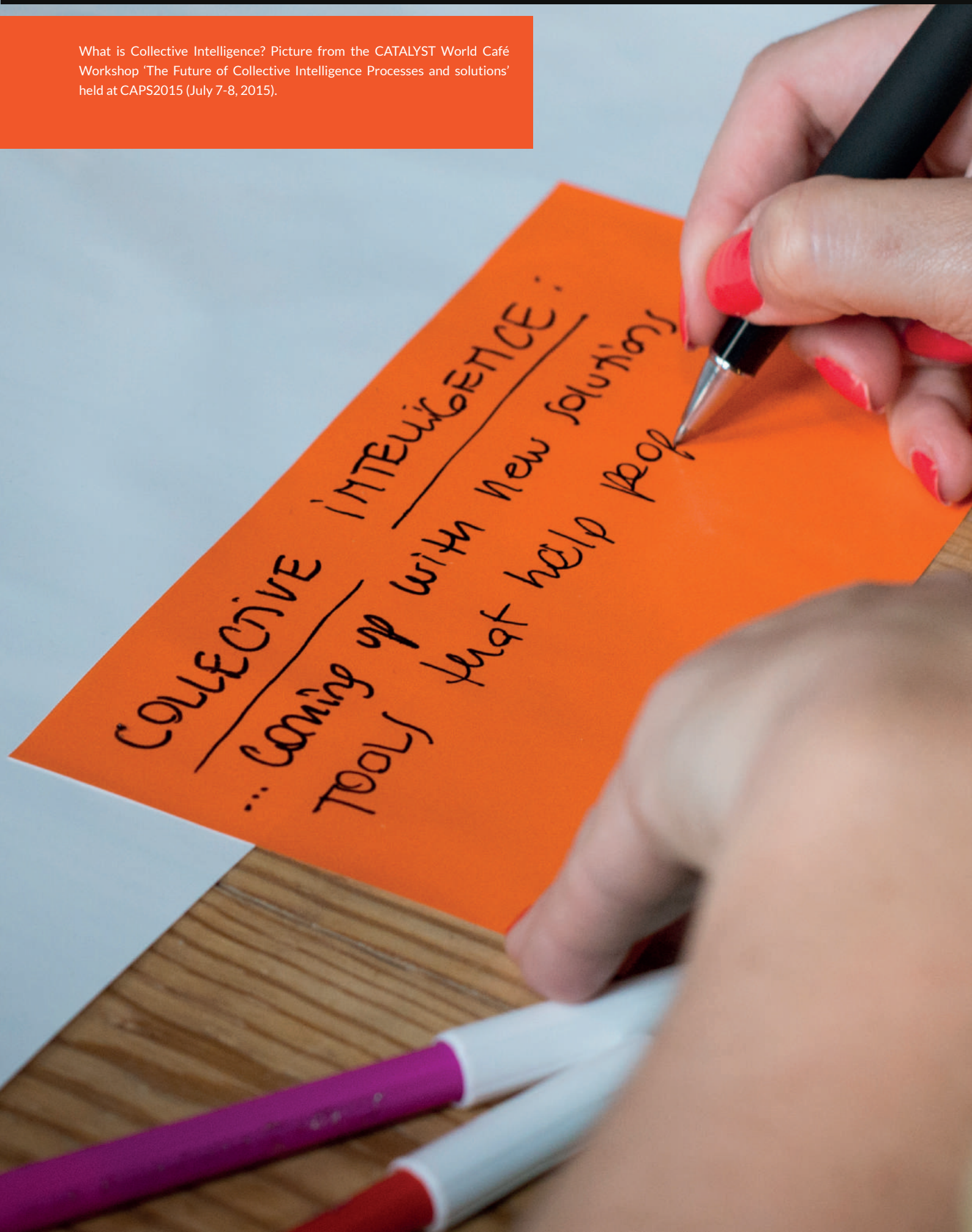
The co-creation approach makes its roots to French philosopher Pierre Levy, who defines Collective Intelligence in the context of a networked society as "a form of universally distributed intelligence, constantly enhanced, coordinated in real time, and resulting in the effective mobilization of skills" (Levy 1994, p13). According to Lévy CI emerges when human interactions, augmented by the use of networked ICTs, directly contributes to enhance social knowledge and converts in the mutual recognition and enrichment of individuals. In Levy's view, CI is mostly a socio-technical phenomenon, which will eventually lead to the ultimate "elevation" of society to a higher civic state. In Levy's view, a key objective and outcome of any CI process is mutual understanding, recognition and improvements of individuals and therefore requires a higher level of awareness and engagements from the individuals taking part to the CI process. It aims at exploiting the power of the 'collective' (Aaron 2005) to move toward the development of intelligent online communities (Levy 1994). Hence, although enabled by technology, the core of CI success lays in the human motivation, engagement and contribution to the process.

In the design space of CI systems, where there is insufficient data to confidently compute an answer, when there is ambiguity about the trustworthiness of environmental signals, and uncertainty about the impact of actions, then a more powerful scaffolding for thinking and discourse is required, in order to support the emergence of CI around complex socio political dilemmas (De Liddo et al. 2012). These types of dilemmas require a process of dialogue between multiple stakeholders for the problem space to be explored, for building common ground and understanding, for creatively and collaboratively construct innovative solutions and to negotiate and choose between often competing solutions. We need Contested Collective Intelligence (CCI), a discourse-based CI that is founded on the principle of diversity of opinions, democracy of decisional rights and on the assumption that no perfect solutions may fit everyone needs, goals and values. Therefore CCI put at the center of the CI process the scaffolding of large scale online dialogue in order to support people to collectively make sense and co-create innovative solutions to complex societal challenges. Conscious awareness, reflection and mutual understanding are paramount to support the emergence of CCI, and dialogue and argumentation are the key mechanisms to enable it.

This intersects with Engelbart's 1963 definition of CI, to develop organizational capacity to augment human intellect, our "collective capability for coping with complex, urgent problems", and in particular Dynamic Knowledge Repositories, a component which captures key elements of the collective dialogue. Engelbart can be considered as the founder of the CI field in the information sciences and stresses the importance of capturing and structuring collective dialogue and discourse to augment our collective capacity to solve complex problems.

The goal of the CATALYST project is to foster this former type of co–creation approach to CI, which is discourse and argumentation-based, and requires the conscious social engagement of communities in a structured collective dialogue. CATALYST studied, implemented and tested novel CI technologies to scaffold this collective dialogue.

What is Collective Intelligence? Picture from the CATALYST World Café Workshop 'The Future of Collective Intelligence Processes and solutions' held at CAPS2015 (July 7-8, 2015).



"Collective Intelligence tools aren't Facebook. They are designed to allow longer debates, to spark reflection, to tackle complex problems, to raise awareness"

1.3 The CATALYST vision

In the design space of CI systems, which targets complex socio-technical dilemma – such as social economy, social innovation and e-democracy – Collective Intelligence cannot be seen as result of mere aggregation of users' logs, and a co-creation approach is needed. Collective Intelligence can be rather viewed as comprising a spectrum of capabilities that ranges from collective sensing on one end (where a collective gathers data on its environment), through sensemaking (interpreting data to identify patterns that warrant action), ideation (developing ideas about which actions to pursue), decision-making (selecting the best actions), and action (implementing these actions in a coordinated effective way):

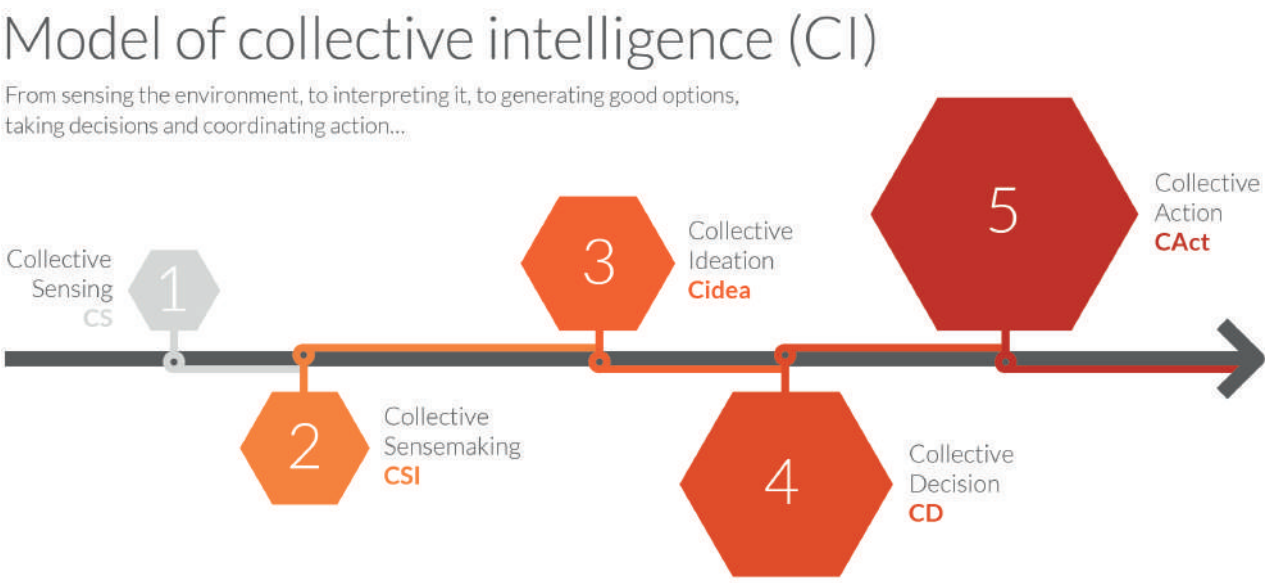


Figure 1: the CATALYST Model of Collective Intelligence

Within a CI Spectrum ranging from Sensing to Collective Action, CATALYST focuses on Contested CI (Sensemaking and Ideation), which recognises the centrality of deliberation, argumentation and public debate. In order to understand and support the dynamics of multilingual social and deliberation networks, the project focused on:

- Human-assisted online tools to inexpensively harvest the vast amount of data and knowledge that develop in social media, and facilitate collective ideation, creativity and citizen engagement;

- Analytics to measure the quality of the Collective Intelligence dynamics back to the community to make the collaborative process significantly more effective.

1.4 Tools applied to Collective Intelligence

The Collective Intelligence model (see page 4), as developed by the CATALYST consortium, is reflected in the tools as follows.

Assembl
1/ Discuss & Observe
2/ Harvest/Catch
3/ Categorise & Map
4/ Summarise
5/ Monitor & Moderate

Developed by Imagination for People, Assembl is a software application that allows hundreds or even thousands of people to work together productively.
It reduces the chaos of working in a large group and facilitates the emergence of innovative, new ideas.

KEY FEATURES
• Move quickly from an unstructured discussion to a structured debate
• Stimulate members of a community with our creativity widget
• Bring-in outside discussions and information from the web
• Capitalize knowledge through syntheses after each cycle of the debate

DESCRIPTION
Assembl focuses on moving an unstructured debate toward a structured set of ideas.
Ideas are extracted and organized into a table that provides an overview of the discussion. The unstructured discussion is key to facilitating the co-creation of new ideas while the structuring process allows people to quickly hone in on the area of discussion that interests them. Assembl's tools help reducing the time this structuring process would normally take by a factor of 10.
In addition, Assembl incorporates a creativity widget that helps users approach topics from different angles to re-animate the discussion.
The process works via 'rough consensus' to determine the direction of the debate. After the synthesis is sent out and validated, the discussion process enters a new cycle.

DebateHub
1/ Discuss & Observe
5/ Monitor & Moderate

Developed by the Open University's Knowledge Management Institute, DebateHub is a tool for online communities to: raise issues, share ideas, debate the pros and cons, and prioritise contributions in order to collectively organise and progress good ideas forward. DebateHub is distinctive in its use of advanced analytics to show the best argued ideas, and visualisations of a community.

KEY FEATURES
• A grouping mechanism to set up discussion groups
• An intuitive linear interface for argumentation-based discussion
• New mechanisms to prioritise issues, ideas and arguments
• A Moderator toolbar to allow re-structuring and organisation of the debate by merging and splitting ideas and arguments.
• A Visualisation Dashboard to support community management and sense making of the debate.

DESCRIPTION
Public deliberation in complex socio-technical debates is critical, but poorly supported by today's social media platforms: it is hardly possible for citizens and community managers to quickly grasp the state of a public debate, know where they might best contribute to advance understanding, and effectively identify and pursue socially innovative ideas.
DebateHub is an innovative tool for community deliberation that provides an intuitive interface for large-scale argumentation and advanced analytics and visualisations to enhance sensemaking, attention mediation and community moderation.
DebateHub helps communities to identify the most robust ideas in the noise. It provides a collaboration environment in which ideas can be debated and assessed, in a way that it is not the most popular idea to win, but the one for which the best arguments are brought forward and the best evidence are provided.
DebateHub also supports informed participation to public debates by providing a Collective Intelligence visualization dashboard consisting of summary analytics and attention mediation feedback. These features support newcomers to get a sense of where is the debate at and what is the best way for them to contribute. The DebateHub Visualization Dashboard is also a tool for community managers to monitor their community, promote attention and prioritize community's resources and actions.

LiteMap
2/ Harvest/Catch
3/ Categorise & Map

Developed by the Open University's Knowledge Management Institute, LiteMap is a Web tool for mapping out visually the content of online debates across different forums and websites. With LiteMap users can harvest issues, ideas, pros and cons of public debates and connect them in meaningful network graphs. LiteMap supports web annotation and visual summarisation to trigger reflection, promote deeper understanding and improve engagement with online debates.

KEY FEATURES
• A bookmarklet to harvest and annotate content while browsing the web
• 2-D mapping canvases to connect ideas and build argument maps
• A community website to collaboratively create and share maps
• A Visualisation Dashboard to support sensemaking and reflection

DESCRIPTION
Online discussions on issues of public concern are often dispersed across different websites and social media environments. This makes it difficult for stakeholders to make sense of the state and progress of a public debate.

LiteMap is a tool to support sensemaking and summarization of public debates across Web forums and discussion media. By allowing easy markup and annotation through any Web browser, LiteMap enables users to grasp clips of text from an online conversation and make them objects of further reflection and discussion. Within LiteMap content from previously disconnected online conversations and debates can be connected in new meaningful ways. Visual maps can be built by single users or groups to make a point or better communicate ideas and results to others. LiteMap is designed to help both community managers and community members.

Community managers can use LiteMap to organise contributions to the debate, reduce idea duplication, and support content analysis and summarisation.

Community members can use LiteMap for sensemaking and self-reflection: to build a visual representation of their own view of a topic or debate; to communicate personal ideas to others; and to point the community's attention to important issues.

Edgesense
5/ Monitor & Moderate

Developed by Wikitalia, Edgesense is a Drupal module that adds social network analytics to Drupal forum and community sites. By augmenting online conversations with network analytics, Edgesense is able to foster collective intelligence processes. The vision behind all this is to contribute to building a format for participatory democracy that works at the global scale.

REPRESENTING RELATIONSHIPS IN ONLINE CONVERSATIONS
Edgesense represents the online conversation as a network of comments. User 'i' is connected to user 'j' if 'i' has commented a piece of content (including comments themselves in threaded forums) authored by 'j'. Such a network is directed – 'i' can comment 'j's content without 'j' in his/her turn commenting 'i' – and admits loops – 'i' can comment his/her own content.

USE-CASES FOR EDGESENSE
Case 1. Community manager/moderator
Every conversation has a structure. Community managers can check who is talking to whom, which users are central vs. peripheral in the conversation, who are the gateways etc. This is useful for curating the debate from a relational point of view: it also helps determining which users carry more authoritativeness (eigenvector centrality or Pagerank type measures).
Case 2. Advanced user
Individual users might use Edgesense to find him/herself in the graph and get an idea of his/her position in the conversation. Is he/she central or peripheral? Which subcommunity is he/she a part of? Is there a dense network of relationships somewhere else, that he/she is not participating in? A competitive user might even try to implement strategies to increase her centrality.
In both cases, a nice plus of Edgesense is that it lets its users learn about conversation networks in a natural, intuitive way (intuitive because the learning happens in the context of the online community that the user is a part in and knows well).

The Collective Intelligence (CI) Dashboard
6/ Reflect, Communicate & Share

Developed by the Open University, the Collective Intelligence Dashboard is a tool aiming at monitoring, measure and understand the nature and quality of the Collective Intelligence processes emerging within the community debate. In other words, it is the place in which advanced analytics on social and conversational dynamics can be made visible and fed back to the community for further awareness and reflection on the state and outcomes of a public debate.

Moreover, The University of Zurich has developed a server application called **Deliberatorium** that calculates deliberation metrics of the argument maps built by the harvesters. Within already fifteen metrics implemented, the application aims at identifying meaningful patterns in online deliberation, and mapping these patterns to personalised attention-mediation recommendations for the deliberation participants.

Catalyst
catalyst-fp7.eu

CATALYST partners live-demonstrating the Collective Intelligence ecosystem of tools developed within the project.

1.5 Collective Intelligence in practice

CATALYST tools have been tested in different environments: some conclusions from the open call tests are illustrated below.

1.5.1 Case study 1 - Collective Intelligence for education: online discussion with students

(Excerpt of the University of Naples feedback report)

This test was carried out by the University of Naples Federico II, Italy– Department of Industrial Engineering, which, through an open call, was selected as a testing community in order to test DebateHub and the CI Dashboard CATALYST tools.

The main interest of this partner to participate to the CATALYST Open Call for Collaboration was to test innovative web-based collaborative technologies able to harness Collective Intelligence and online mass collaboration for supporting collaborative and distributed deliberation processes.

In particular, this research group was interested in testing the hypothesis that knowledge articulation and visualization through argument mapping formalisms supports critical thinking and exploration of the problem space if integrated with additional widgets (e.g. visualization tools) to promote social engagement, mutual understanding and better collaborative performance.

In a nutshell, the aim of the collaborative research carried out in this test was to improve collaboration performances and outcomes of online deliberation processes by mediating users' interaction with innovative online collaborative knowledge mapping technologies.

To this end, the test of the Debate Hub and the Collective Intelligence Dashboard was a unique opportunity to better verify the above mentioned hypotheses and to provide some key insights and guidelines for the design of better collaborative platforms and web-based technologies.

This field test allowed us to:
1) Evaluate how different kinds of visualization impact on users' performance. We measured users performance by calculating users' mutual understanding, perceived quality of collaboration (PEC), perceived ease of use (PEU) and accuracy of individual prediction, and tested how the use of different visualisations affect each of these variables.
2) Assess if there is any interaction and synergy between social and content visualizations when provided together.
Finally, the test results have been used as feedback to identify improvements and revisions in the design of the CATALYST tools tested (DebateHub and The CI Dashboard Visualisations).

As the aim of this field test is to compare the performance of different versions of Debate Hub, as well as the impact of different visualizations (i.e. social and content awareness) on users' performance, we adopted a 2x2 experimental design in which one factor is the availability of social awareness visualization and the other the availability of the content visualization. Therefore, participants were randomly divided in four groups, each composed of about 35 students and they were asked to discuss about the price trend of the Crude Oil in the future three months. These students were randomly assigned to the four groups (T1, T2, T3 and T4) in order to ensure the validity and universality of our outcomes.

Specifically, group T1 used a plain version, i.e. a version of DebateHub in which all the available data visualization features were removed; group T2 used a platform able to provide only social awareness visualization, that is Social Network and Users' Activity Analytics; group T3 used a platform able to provide only content widgets, that is Debate Network and Activity's analytics; finally, group T4 used a platform able to provide both social and content visualization, namely Social Network and Activity's analytics. The next Figure shows the type of Visualisations tested.

From the comparison of different performance variables in the four conditions we were able to draw the following conclusions.

The results show that the augmented platforms (with CI dashboard visualisations) performed better than the plain version. In particular, it is possible to claim that when only one kind of visualization is provided, the better performance both in terms of users' activity and users' perception about mutual understanding, quality of collaboration and ease of use are reached.

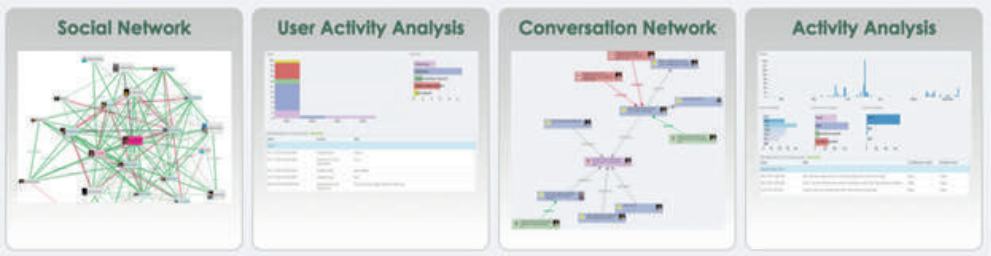


Figure 2: Example of the four visualisations tested

Therefore, **the results of this study show that the presence of visualization tools could effectively support the mutual understanding and the collaboration among users and visualization impacts positively also on the ease of use of the platforms**. This finding has relevant implications for designers of collaborative platforms as it could indicate the way to better define the characteristics of these kind of platforms and manage the trade-off between participation and knowledge organization.

When interviewed in general, **students were very satisfied and interested about the experience and they claimed that DebateHub is a very useful platform in supporting and effectively guiding a decision-making process. Several students suggested using this platform as a learning tool or as a new modality for evaluating their learning. No usability barriers were identified and students found the tool very easy to use**.

Lessons learned on Experimentation Design

Several new things were learned thanks to this field test about how it is best to engage users in these types of experiments. In particular, the definition of a time-window (4 hours in one day) during which participants could discuss about the price trend of the Crude Oil has been one of the most important lessons learned. Indeed, the definition of a proper time-window to participate to the discussion has impacted positively both on the quality of the content-generated and on the users' participation; additionally, preliminary results on the content-generated show that a greater quality of the contributions (no redundancy, stronger coherence of the post respect to the topic, very few off-topic posts etc) was produced. Finally, also the participation was very good as, on an initial community of 143 students, 140 completed all the experiment phases (warm-up phase, experiment phase and compiling follow-up questionnaire).

1.5.2 Case study 2 - Preparing the OECD Forum: online discussion on youth well-being

(Excerpt from the OECD feedback report)

From March 30 to May 8, 2015, Wikiprogress run a 6-week online consultation on Youth Well-being hosted by Assembl. This consultation was quite different from previous discussions held on Wikiprogress, and the aim was to cover a very wide range of topics in as much details as possible in order to produce a report for policy makers and practitioners. The results of the consultation were presented at the OECD Forum in Paris in June. The purpose of the consultation was to use the OECD's WikiProgress website to ask a diverse global audience how to improve well-being outcomes for young people. Specifically:

- How should we measure and define youth well-being?
- What works for improving young people's well-being?
- How can we improve the process for effective youth policy?
- Case studies and best practice.

This was the first time that Wikiprogress has conducted an online debate on such a scale and duration (with previous Wikiprogress online discussions lasting a maximum of 2 weeks and attracting around 30-50 commenters). Using Assembl to conduct a more ambitious debate lasting almost 2 months, was an interesting and useful experiment and many lessons were learned from the issues encountered. In particular, it was very challenging to get large numbers of people to register and to actively participate in the debate on a sustained basis, and **the role of the community manager(s) was central to the success of the activity**. Ensuring that the user experience, as well as the experience for moderators and harvesters, were as smooth as possible was also a key challenge, and OECD worked closely with Imagination for people

throughout to implement improvements throughout the consultation and in the period afterwards. The biggest challenge for the experiment came from the fact that Wikiprogress has a very large and diffuse audience, and so, in effect, the success of the debate relied on the ability to build an active sub-community of interest around the debate. Most of the lessons learned relate to reducing the barriers to participation for new arrivals to the debate. Overall, many useful lessons were learned, some of which are summarised below

The role of community manager(s) is crucial

The Wikiprogress Assembl test differed from most other Assembl tests in that rather than starting with a small, well-defined community of interest, Wikiprogress instead has a large, yet diffuse audience (20k visitors to the website every month, 34k newsletter subscribers). For topic-specific activities, the Wikiprogress model is to build a sub-community of interest with the help of knowledge partners. The same approach was followed in this case, but it was clear that in order to keep momentum going in terms of the registration and active participation of the community, then a lot of effort was needed, equivalent to the time of a full-time community manager. Community creation/ management tasks included:

• Writing blogs and newsletter articles to inform the broad Wikiprogress audience and to send out a call for partners
• Recruiting partners, explaining the process and objectives to them, providing them with communications material to promote the activity to their networks, and help trouble-shooting any issues that arise
• Profiling the activity on social media channels before and throughout the activity
• Answering questions of participants

These tasks are in addition to that of moderating/harvesting the debate, which themselves were also quite time-consuming. As the aim with the Assembl test was to encourage a very high-level of continued participation, then the requirements for community management ended up being very demanding (more than envisaged originally).

As Wikiprogress did not have a full-time community manager to devote to all of these additional tasks, then the different tasks were shared between OECD/Wikiprogress staff and Imagination for People staff. In particular, in terms of moderating the debate, the assistance of Imagination for People was crucial to the success of the activity in this regard as they went above and beyond their core responsibilities to foster community participation. In particular, Imagination for People was very active in the moderation of the debate, which helped to keep the discussion going. Imagination for People was in regular communication with OECD/Wikiprogress staff to deal with issues as they arose and suggest solutions.

More detailed analytics are very useful

At the time of the OECD Assembl test, analytics on visitors and participants to the debate were quite limited. For a debate such as this, where the actual audience may be significantly larger than the number of active participation, more sophisticated analytics would be a useful community management tool, as well as giving more accurate numbers on the actual impact of the debate beyond active participation. Imagination for People has been working to improve this since the consultation.

Overall, **the experience was a very fruitful one for the OECD as it led to a rich and interesting debate on Youth Well-being, which has now been presented to the Wikiprogress audience as well as to participants at the OECD Forum in June 2015.** All together, the required input to the debate was more than originally envisaged, with a significant share of time of the Wikiprogress manager, a part-time consultant taking on the tasks of moderating/harvesting, and Imagination for People staff putting in a lot of effort beyond their task description to make the debate a success. However, a lot of useful lessons were learned on both sides that can be applied to future implementations of Assembl and future online consultations on Wikiprogress.


Com
Alberto Cotti
Edgeryder test
Ruxandra Cr
founder Babe
Edgeryder test
Quentin Grin
ECD test with
ee-Sean Hu
sity of


munity testing Panel
ica - Wikitalia
t with Edgesense
Edgesense
eosteanu - Edgeryders and co-
ele
t with Assembl
Assembl
maud - Imagination for the people
h Assembl
uang - Purpose
Naples test with Debate Hub
Debate Hub

1.5.3 Feedbacks from testing communities

(Excerpt from the Ashoka, OuiShare and Edgeryders feedback reports)

Ashoka Changemakers
From March to May 2015, we ran a pilot with a group of social innovators in the field of learning and play using the Assembl Collective Intelligence online platform.

« The concept of harvesting and the harvesting tool was great. Being harvested was reinforcing as a participant, and reading harvested nuggets was a great way to get a quick feel for the content of the discussion and the ideas discussed. »

« I loved feeling like I was connected to people who are dreaming big, sharing ideas and seeking to change education. »

« Synthesis is an extremely interesting feature to offer participants a summary of the discussion at the end of every week, inviting them to contribute to the new topic being offered in the following week. »

« It is clear that the goal of Assembl as a conversation tool is powerful and has great potential. Features like "Harvesting" have been very well received and inspired the contributors to stay connected. »

« Harvesting is a particularly interesting feature of the Assembl platform. It highlights the "gems" in a long post that helps users to quickly capture the gist of a conversation. »

« An advantage that we perceived from the use of Assembl is that it encourages the participant to keep contributing. »

Edgeryders
From January to July, 2015, the Edgeryders community tested two tools of the CATALYST Collective Intelligence ecosystem: Assembl and Edgesense.

« Edgesense provides an easy way for users to have more of a network thinking about their communities. »

« Edgesenses provides an overall understanding of the network, how big it is, how modular, and how information flows throughout the network. »

« It provides a quick tool in knowing more the central members of the community and the load of communication done by moderators. »

« Edgesense shows how the community develops, which could be used in various ways. »

« This tool also shows how sustainable the sub¬communities are with or without the moderators. To make a conversation sustainable, we need to measure if the discussion keeps going, and this was possible through Edgesense.

« On its side, the Assembl synthesis was useful as it allows to have a very good overview over a discussion with multiple users in a structured manner. »

OuiShare
The test period of LiteMap by OuiShare lasted from February to the beginning of August 2015, during which 7 extensive maps were created based on data from different online and offline sources.

« We see LiteMap as a tool of great potential, especially considering the presence of the entire Catalyst toolset and its interoperability. In addition to the collaborative mode, LiteMap has possibilities for extensive analytics, as well as for displaying and arranging data in different ways, which could be used for a variety of purposes like interactive presentations or as collaboratively created illustration material. »

CATALYST participated to the CAPS poster session at CAPS2015. A great occasion to explain the project to the large crowd who attended the CAPS2015 Conference in the morning of July 7, 2015.

2

CATALYST METHODOLOGY: ITERATIVE TEST & DEVELOPMENT

As stated in the earliest design documents, CATALYST partners were committed to an agile, iterative work plan with early feedback loops between test and development, and an ecosystem of services with separation of concerns between partners. One key reason for this approach, besides reducing uncertainty, was because we had foreseen that different communities would require different methodologies, and each methodology would require its own approach and set of tools. An ecosystem of services was to allow us to mix and match tools to different communities' requirements, and experiment with different methodologies.

The feedback loops in the consortium are many: first, the way we understand Collective Intelligence itself is based on a first, inner feedback loop between participants' conversation being converted by harvesters into summary maps, which can be further interpreted by analytics and fed back into the conversation. The end-users are at the beginning of the value chain; new ideas are expected to emerge organically from the conversation and mapping activity.

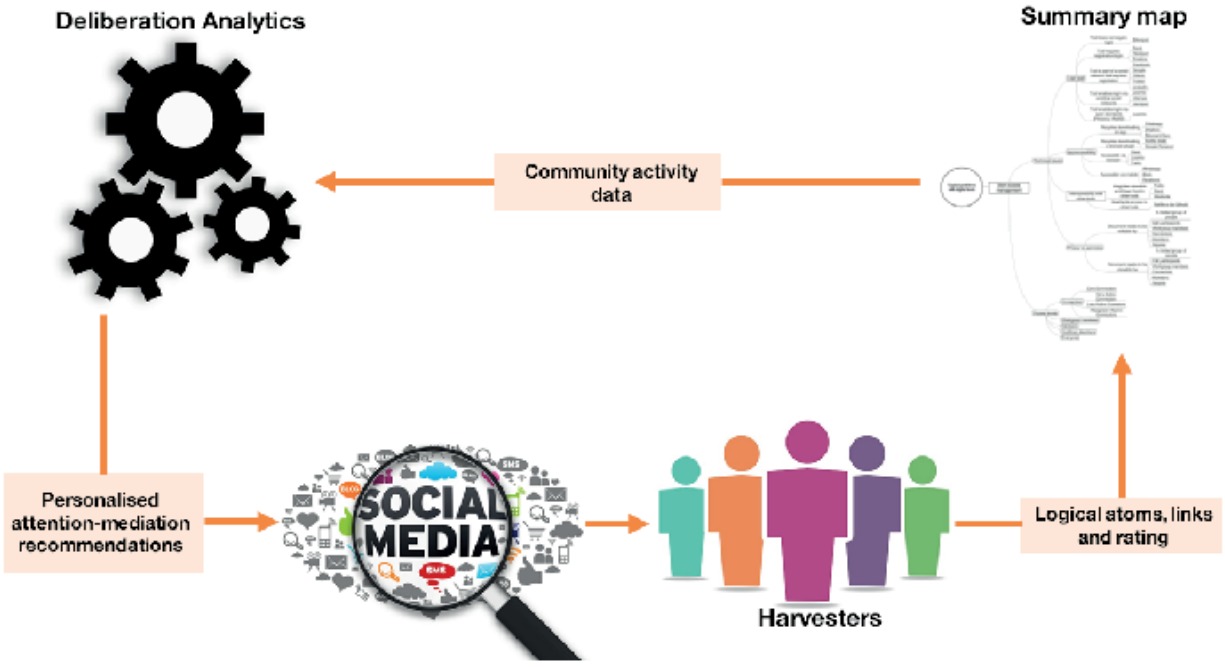


Figure 3: the CATALYST consortium feedback loop

Our work as a consortium was to facilitate this process, and enrich it at two levels: there is a technical outer feedback loop, where community testing enables us to improve the tools themselves, and a methodological outer feedback loop, where observation of the community process help us build an understanding of Collective Intelligent processes, improve methodology, and adjust tool design appropriately.

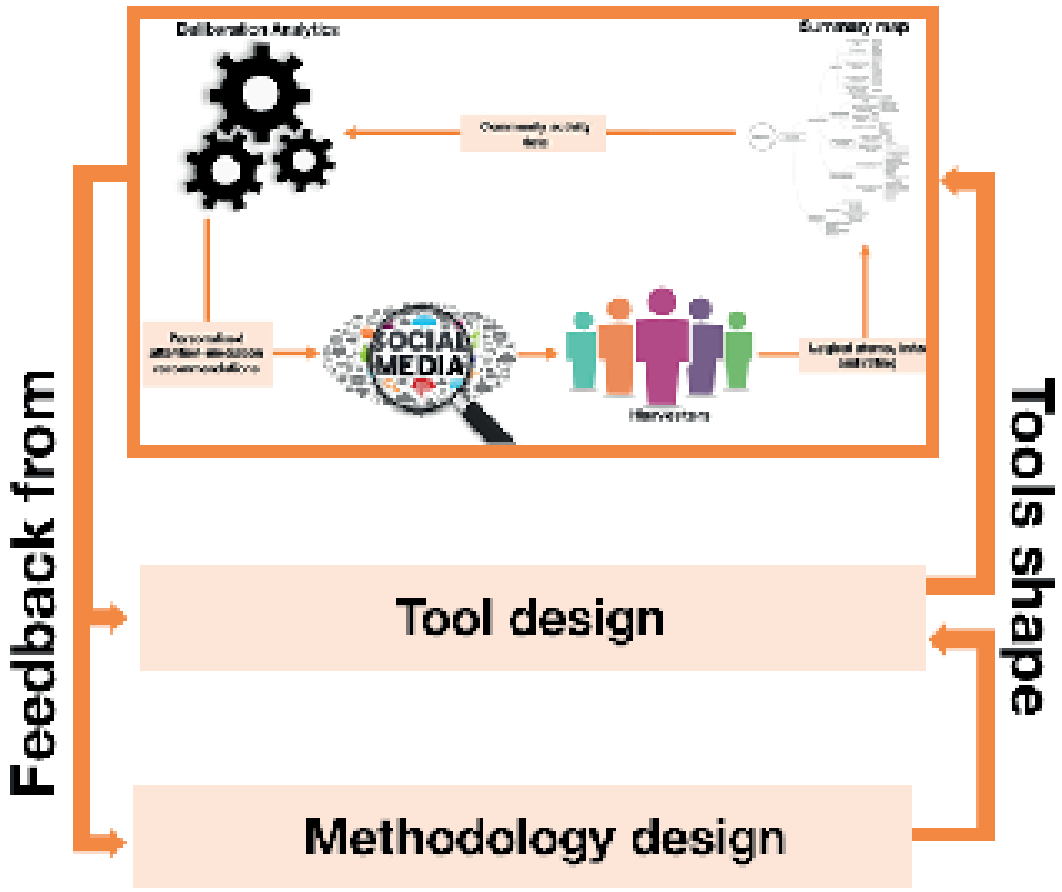


Figure 4: the CATALYST outer feedback loop

These feedback loops are in contrast to many common mechanisms of a priori analysis of needs, which cannot be applied to the CI process because of its open-ended nature: We do not know what shape the conversation will take in a given community, and we have no pre-defined specific goal to benchmark against. So, for example, the marketing practice of target market search cannot be applied for tool design. It cannot be used for community selection either, since reaching out for early feedback works for commercial products targeting individual consumers, (or groups of them), but much less when the end user is a collective.

2.1 Technical lessons learnt

At the technical level, our approach was a qualified success. On the one hand, we have succeeded in delivering major components of the ecosystem of services, and to achieve interoperability between them. Our tools offer a valid starting point for a toolkit for Collective Intelligence developments. However, our tooling is extremely diverse, and our ecosystem approach means that the seams between components are quite visible; on the other hand, most users of the contemporary web have been accustomed to seamless visual integration by monolithic web platforms such as Facebook, and are easily baffled by context switches between components.

Overall, we had the most success integrating analytics into our platforms, since the analytics are mostly not user-facing; visualizations can be embedded, but the interaction with the platform is still problematic; and the widgets required too much integration (visual and technical) to be practically shared between platforms.

More importantly, we have known from the beginning that it would be at best arduous to move users from existing communities to a new platform, and that means we had to tackle integration with existing communities' platforms. Unfortunately, this proved much more difficult than planned, both for social and technical reasons (many social platforms actually benefit from being a walled garden, and even platforms that are open in principle will struggle to allocate resources to interoperability), and some of the external integration infrastructure came quite late into the project. Until then, we had to be satisfied with communities that were either willing to shift platforms, new ad hoc communities that were willing to get started on our respective platforms, or partial integration that was perceived as jarring by platform users. This was one of the key hurdles in getting large-scale community testing off the ground.

On the positive side, we have succeeded in sharing data between components for analysis and visualization of conversations using very different data models, owing to methodological diversity between the teams. We have confidence that many of the remaining performance and integration hurdles could be lifted without a fun-

damental change of approach. But the general ecosystem approach must be complemented with ad hoc and tight integration with other platforms.

Aside from this technical result, the community testing has emphasized the paramount importance of user interface work. Collective Intelligence works best when it is transparent, and participants generally want to understand how their contributions are integrated into the final report. Thus, they must be given access to visible expressions of the harvesting and analytics processes. On the other hand, the complexity of the underlying process can also scare participants away, and much raw data from analytics is hard to interpret without training, so the interface must be simplified as much as possible. These create a tension in the user interface, which must find the right balance between obtrusiveness and discoverability of the information about the Collective Intelligence process. Future development would certainly involve a more elaborated user model, allowing to provide information progressively as the participants and harvesters become more familiar with the platforms.

2.2 Methodological lessons learnt

One of the main positive learning points of CATALYST concerns the diversity of community processes, and the challenges of involving either a new or existing community in a Collective Intelligence process. Some communities in the testbeds were ad-hoc communities gathered to discuss an issue, but we also had a few pre-existing communities that had been involved in an ongoing conversation for years. Some communities were based on existing organizations or locations, other were drawn by a common interest. Applying our tools to this diversity required a pre-identification of each community's needs, so we could adapt both our methodologies, and the tools themselves, to each situation.

But prior to the CI process as defined in our spectrum, the community's first need is to exist and take shape. This involves the early formation of the community, how it grows and recruits new members, how members identify with the community, social banter, etc. Unlike aggregation, the co-creation approach to CI cannot emerge unless the community can recognize itself as such, involved in some form of common process. That process can be centered on shared awareness of an issue, a decision, shared action, any of the steps of the CI spectrum as identified; but we cannot underestimate the importance of the community's self-definition. Again, this takes diverse forms in loose communities (e.g. communities of practice, political coalitions) vs. organizations with well-defined boundaries and membership; but self-identification remains crucial.

This is why we originally planned to focus on interfacing with existing communities, and we had good results whenever we could do that, as in the case of communities of practice and Wikitalia; but most test cases ended up involving ad-hoc communities around an issue (such as the OECD study) or new communities (Seventh Sustainable Summer School) In those cases, we had to deal with the traditional onboarding issues. We could confirm a previous observation that participation followed a kind of power law, with a very small participants contributing a lot, some more contributing regularly, some reactive contributors, and many lurkers. The social networking visualizations confirm this network effect. What became clearer is how much initial investment was required from moderators to bootstrap the community, with an initial canvas of issues and welcome messages, so the first participants would feel this community was worth their time. Even after that, moderators had to remain involved to ensure that the community felt alive to participants and entice newcomers.

In the case of Assembl, where we provided a synthesis, we found that its formulation was crucial (we would expect that the structure of the debate in LiteMap would play a similar role). The role of the synthesis was both to help newcomers come up to speed with the conversation, and to rekindle a conversation that was settling down. We found that there was a delicate balance to be struck there: a very short synthesis would not have positive impact, but attempts at an exhaustive synthesis would be useful to newcomers, but overbearing to existing participants. Similarly, we had to be careful to formulate open questions in the synthesis, as a mere summary was perceived as a closure and participation died down rather than opening up.

Another key issue in a social setting is that of roles and moderation, especially in terms of who is drawing the big picture from individual contributions. Given the important roles of harvesters and moderators, they must ensure that they play this role in a neutral way, so participants can trust that their contributions will receive due consideration. In one case, where we designed the ideation widget to allow participants to propose new solutions that could be integrated in the table of ideas, the moderators worried about how the participants would perceive the obvious act of choice, as opposed to the more diffuse role of harvesting. In contrast, we were surprised that harvesters were asked to answer for omissions, and though we can say that harvesters were thorough and omissions were rare, it seems that the frequent double role of harvesters as participants means that they are felt to be part of the community, and trusted as such. Though we still believe that participants' need to understand the information flow in the platforms, and how and why their contribution is highlighted, it seems that community trust allows the soft power inherent in the role of harvester to be accepted without much contestation.

2.3 Typology of communities and community processes

That said, most of the debates in our test cases were exploratory, and focused on the divergent phase of decision making, with little or no convergence (or, in CI terms, stopped at ideation, before decision and action.) There were indeed much more positive than negative arguments, which is a marker of a community rather than an antagonistic debate or a decision process with limited resources. There is clearly a typology of communities and community processes to be drawn along those lines: Research communities would need more sensing (and would benefit most from co-construction in qualitative research); students would mostly need sensemaking; communities of practice tend to focus on sensemaking and ideation; political parties on decision and action; innovative organizations on ideation and

decision; governing entities, whether political or corporate would be using the full spectrum. Since most of our tests involved exploration of issues (sensemaking and ideation), social mechanisms of cohesion were more important than those of dispute resolution. We can expect this to vary with context.

Another differentiating characteristic is that ad hoc communities are transient, and the needs of a transient community are deeply different from those of a long-lived community such as a community of practice. In the latter case, it would be more important for the tools to show the evolution of the collective understanding, rather than simply a snapshot, especially if the problem is complex and the emerging understanding is quite different from the naive view that newcomers would be expected to hold. Of course, not all problems are wicked problems, and in some cases the need of newcomers is more to come to terms with the wealth of information in a long-standing idea map and conversation. This problem is more akin to a classical knowledge management problem, with a special emphasis on changing and emerging categories.

At a broad level, the design of the CATALYST project platforms was optimized to improve the signal-to-noise ratio for very large communities, trying to extract the ideas from the social banter; but since our communities were smaller than designed for, we realized how vital that banter was for the community to function as such. As we involve larger and larger communities in future projects, we expect our initial design choices to pay off; but it has become clear that we must provide channels for social channels at scale. Again, it is probably best to co-exist with social networks, who are focused on that problem, and we are currently taking advantage of our connectors with social networks. But even if we do not try to reinvent the social wheel, we have reason to believe that it would be useful to express community markers in the idea structure, as they clearly drive identification and participation.

Defining Collective Intelligence. Picture from CATALYST World Café Workshop 'The Future of Collective Intelligence Processes and solutions' held during the project final event.

3

R&D IN COLLECTIVE INTELLIGENCE: RECOMMENDATIONS FOR FUTURE COMMUNITIES AND TECHNOLOGIES

3.1 Rethinking online engagement

Our experience with community engagement in civic debate suggests several directions for additional research and experimentation in building on existant communities, user motivation, topic curation, and the tighter mapping of tools to the communities of anticipated users.

3.1.1 Promoting debate as a value and a behaviour

Building community, whether online or offline, is a difficult task. As we have observed, online civic debate seems to be a relatively rare phenomenon. In one of our tests, we found it difficult, if not impossible, to convert an audience of readers into an engaged community of debaters. We were trying to both create a community and audience from scratch and seed a new and elusive behaviour of debate into a brand new and poorly-defined community. On the other hand, communities with a valuable base of engaged users which were recruited through the Open Call, didn't have only debate as a natural behaviour. Future work should firstly focus on existing communities used to debate, and in advocating the importance of online debate both with nascent ones and with public institutions.

In the case of fresh communities, we identify key factors for the adoption of Collective Intelligence tools, which are illustrated in paragraph 3.1.3. For what concerns policy-makers, the fundamental question is how, besides the intrinsic motivations of personal and civic interest in taking part in an online debate, might we design incentives for future user participation? For StoryEurope, the campaign we conducted to test DebateHub, we offered potential participants in the debate the opportunity to be acknowledged as co-authors in an e-book that would aggregate and synthesize all of the content from the campaign. Such a debate topic, if supported by political stakes, could have an impact on European decision-making, and these future debates could feed into the broader political process. While the StoryEurope campaign was running, the Greek/Eurozone debt crisis was dominating the European news cycles. Now, at the conclusion of the StoryEurope test period, the issue of refugees and migrants entering Europe is now at the fore of public media awareness. Given the immediate and visceral nature of these current events in the news, timely support from political institutions could be vital in engaging debates on topics of public interest, as the public debate evolves quickly.

3.1.2 Securing tighter alignment of Collective Intelligence tools and communities

From our experiences in experimentation, we think that future testing and outreach should focus on mature communities that already have high levels of peer-to-peer interaction including debate and discussion. The existing communities that we approached for testing were enthusiastic about the CATALYST tools, but their community managers and members had little to no experience with online debate, which made adoption of tools difficult. Some of the communities intercepted were focused on campaigns for social and political action that focused on social media posts/retweets and petition signing.

Moreover, our approach to Collective Intelligence and civic debate differs subtly from the campaign archetype. In the campaign context, the velocity of content tends to flow from the campaign organizer to campaign members. When working well, the tools of Collective Intelligence and online debate should spur a velocity of content that tends to flow between campaign members and up to policymakers. Large-scale deliberation does not appear to be an existing behaviour that is natively occurring in most online communities, which focus on

collective action rather than collective deliberation and decision-making.

For future exploration, we suggest building deliberation into the "DNA" of a community from the beginning, in order to grow the community and the Collective Intelligence tools together. Or, in a similar spirit, if opposite direction, it may make sense to focus on very mature communities that already have existing deliberation and debate behaviours.

What has become clear over the course of the project is the vast variety of different communities on the one hand, and types of societal challenges they are trying to develop solutions for on the other hand. Communities' nature (short- or long-term, open or closed, online, offline or mixed just to name a few) and goals (specific time sensitive task, general exchange of ideas and experience…) differ tremendously, leading to a diverse need portfolio of online tool. Also, it showed that when looking at the different societal challenges that the CAPS projects in general and CATALYST in specific want to address, they are only partly "wicked problems" requiring a Collective Intelligence effort to work on solutions. In some areas, more simple forms of online engagement like crowdsourcing of ideas or awareness raising for behaviour change might be more appropriate approaches.

Understanding community needs and the nature of the topic it is working on is often harder than one would anticipate, but is key to ensure that the Collective Intelligence ecosystem developed within the CATALYST project can be successfully applied.

3.1.3 Key factors

The following factors describe the type of needs that communities should have to find the CI co-creation approach and CATALYST ecosystem of tools useful.

First of all, community members have to be convinced that a dialogue with peers brings the discussion forward. They also have to see a direct benefit for themselves or their organizations of engaging in the discussion while at the same time being willing to share their knowledge with peers (they won't if they feel the information is competitive or sensitive). Another point is that the communities should not have easier ways of exchanging ideas and working together, like regular face to face meetings, and have no well established structures of interacting with their peers deeply tied into their working realities like publishing research papers, presenting new insights on conferences or sending newsletters.

On a meta-level the issue arises that members of a community need to be willing to spent time on online forums in general. We have seen large differences here between different scientific backgrounds and between cultures (nation, age and specific milieus) often related also to affinity to technology and trust in public and online discussions.

When looking at the type of topic to be discussed using the CATALYST ecosystem of tools, it should be a complex question/challenge, which has so far not been solved to a satisfying extend by anyone, and where several people can help providing thoughts that lead to a solution.

In a real life situation, some additional factors related to interoperability of existing and new tools and well as to decision-making structure need to be taken into account. When communities are already using other tools, options for integrating e.g. mailing lists or Facebook conversations into the CATALYST tools become more relevant as many communities are hesitant to migrate their members due to the fear of losing some. It also became clear when talking to several communities that often community managers lack a detailed understanding on what the different tools can do which makes it hard for them to judge on their benefits. Also, often community managers aren't entitled to decide using a new tool alone, but need agreement from the group.

3.2 Uptake VS extension

For all these reasons, communities almost never discard technology to take up new one in the way that an individual would. When new technology comes around that turns out to be too compelling, however, communities can and do die; they bleed out members and their engagement to other communities built on top of the new, "better" (or more seductive) technology. Usenet groups did not migrate to Facebook; they withered and died, and new communities formed across the social Internet, some of which had similar interests and members in common with the most successful Usenet groups.

The CATALYST experience indicates that in some cases it might be possible to foster adoption of new technologies, when adopting means extending the functionalities of what the community platform currently runs on can be a solution. This way, technical progress becomes a sort of upgrade rather than a switch; it is perceived by communities as nonthreatening. We noticed that there seemed to be no resistance to the adoption of Edgesense, a piece of software that does not require that the community migrates onto some other platform, does not change the fundamental experience of the community using its platform, and makes a point of being integrated with the platform itself (Drupal in our case) at a deep technological level.

Low resistance to adoption, however, comes at the price of turning the whole innovation process on its head. As a consequence, innovation policies to encourage the process have also to change paradigm. If the purpose is to extend the Collective Intelligence capacity of existing communities, the community is not an adopter, but the engine of the innovation process. Funding the community (the innovation's demand-side) and putting it at the core of the process, rather than making it evolve around the technology provider (the innovation's supply side) might help foster the former's ownership of the innovation process, and ensure that the new technology gets the stream of feedback it needs to become compelling.

Innovating for adoption by uptake	Innovating for adoption by extension
Starts with a model of Collective Intelligence, and asks how technology might help the model work frictionlessly in real life.	Starts with the observation that some communities are collectively intelligent, and asks how technology might help communities work more effectively.
Communities are framed as users and testers; professional researchers and developers are "the real innovators".	Communities are framed as "the real innovators". Professional researchers and developers are framed as technology partners.
Develops in labs (universities or corporate R&D).	Develops within the community's platform.
Deploys when it is usable.	Deploys as soon as possible.
Testing is always formalised and expensive.	Informal stream of feedback results from the community "dogfooding" (using its own product).
Scales by more and more users flocking to the compelling new technology (eg. Basecamp).	Scales by propagating across main open source projects (Drupal, Wordpress, Discourse etc.). The innovating community releases a plugin for the platform it uses itself, and other communities install it too. Maintenance costs can be shared (eg. web analytics).
User experience is critical for scaling, documentation is important.	Documentation is critical for scaling, user experience is important.
Can potentially scale as a proprietary model.	Can only scale as an open source model.
Scaling is a threat to existing communities, though it might improve the overall Collective Intelligence landscape if the communities that arise around the new tech are more collectively intelligent than the ones they replace.	Scaling helps existing communities.
To obtain this model, **fund the researcher** and let him/her find communities to test/adopt.	To obtain this model, **fund the community** and let it find researchers and software developers.

Collective Intelligence in online platforms: from discussion to action.

Catalyst

Analytics and open tools for social innovation

This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n°6611188

catalyst-fp7.eu

CONCLUSION

TECHNOLOGIES FOR SOCIETAL IMPACT

Collective Intelligence tools aren't Facebook. They are designed to allow longer debates, to spark reflection, to tackle complex problems, to raise awareness.

A specific type of CI approach, which is centered on knowledge co-creation rather than simple action aggregations, is needed to raise collective awareness of societal challenges. CI technologies that support this approach are scarce. The CATALYST project has delivered several new and improved technologies to support Collective Intelligence and over the course of the project we have tested those technologies with a wide range of community partners (15 in total), in two testing cycles, which have helped bring some lights on the key challenges, success factors and tradeoffs which are needed to effectively promote Collective Intelligence in those communities (section 1).
This paper presents a distillation on our lessons learned in terms of technology, methodology and community engagement (section 2). Based on those reflections we propose key recommendations that could help to carry on future research and development of Collective Intelligence technologies. We also propose an alternative innovation policy that we believe is suitable to encourage the uptake of Collective Intelligence platforms (section 3).

In a nutshell, Collective Intelligence tools can play a key role in solving some of the big societal challenges when used in the right context. We showed that online engagement in general, and Collective Intelligence tools specifically, already work very well with certain community groups that are on the one hand affine to ICT and technology and on the other hand see a direct benefit in their online engagement (section 1, "Collective Intelligence in practice"). Examples for this are open democracy processes were discussion results help filling a policy gap and shaping living conditions of the participants, exchange on work experience that help improving the activities of all involved in the discussion (e.g. of a group of FabLabs that would otherwise not meet) or a collective creation of a piece of thought to input a higher level decision process.

Nonetheless we also acknowledge that although the benefits of Collective Intelligence tools like the ones developed by the CATALYST project were clearly understood and valued by many communities and community managers, people from several scientific disciplined less close to technology and groups more critical towards sharing opinions online need still to be "convinced" of the opportunities that the tools provide for helping to overcome societal challenges. A dialogue between ICT and social science therefore has to be intensified within and beyond CAPS.

Moreover, we found that structured large-scale deliberation is not widely diffused in nowadays Internet society. As we have observed, online civic debate seems to be a relatively rare phenomenon and, when present, it is very fragmented across different social media or constrained to relatively smaller scale mature communities. This is on one side a strong motivation for future Collective Intelligence research and technology development, on the other side though it represents the biggest challenge to CI tools adoption.

Large-scale deliberation does appear to be a strong need but it does not appear to be an existing behaviour that is natively occurring in the communities we targeted, which focus on collective action rather than collective deliberation and decision-making. On the contrary a co-creation approach to Collective Intelligence focuses in the first place on collective sensemaking, deliberation and decision-making (the central steps in the CI spectrum) and therefore needs a cultural shift in which communities first understand the importance of making sense of complexity "before" they act, then are motivated to engage with others in a collective decision making process which lead to democratic community actions. Collective deliberation and decision-making are recognised by many as key needs of a democratic collective society, but very few are really motivated to pay the price to achieve it. Mobilising masses is a healthy and needed first step toward better futures but does not mean changing society toward more democratic practices.

So if on one side other forms of Collective Intelligence may be quicker and easier to reach, they will never answer to the long-term challenge to shift society understanding of the world and even less to create a collective understanding of the common challenges we face together while wrestling in it.

CATALYST has advanced research and technology toward facing this long-term challenge and it has advanced our understanding of the social contexts and the strategies that can help moving forward toward the ultimate goal to build not only Collective Intelligence but civic intelligence in its wider sense.

Table of figures

11 Figure 1 The CATALYST Model of Collective Intelligence
16 Figure 2 Example of the four tested visualizations
19 Figure 3 The CATALYST consortium feedback loop
20 Figure 4 The CATALYST outter feedback loop

References

• A Aaron, W. (2005). «The power of Collective Intelligence.» netWorker 9(3): 16-23.

• De Liddo, A. and Buckingham Shum, S (2010). Cohere: A prototype for contested Collective Intelligence. In:ACM Computer Supported Cooperative Work (CSCW 2010) - Workshop: Collective Intelligence In Organizations - Toward a Research Agenda, February 6-10, 2010, Savannah, Georgia, USA

• De Liddo A, Sándor Á and Buckingham Shum S. (2012) Contested Collective Intelligence: Rationale,Technologies, and a Human-Machine Annotation Study. Computer Supported Cooperative Work, 21: 417-448.

• Engelbart, D.C. (1963). A Conceptual Framework for the Augmentation of Man's Intellect, in Vistas in Information Handling, P. Howerton and Weeks, Editors. 1963, Spartan Books: Washington, DC: London. p. 1-29.

• Pierre Lévy, Collective Intelligence: Mankind's Emerging World in Cyberspace, 1994

• Malone, Thomas W., Robert Laubacher, and Chrysanthos N. Dellarocas (2009): Harnessing Crowds: Mapping the Genome of Collective Intelligence. MIT Sloan Research Paper No. 4732-09. Available at SSRN: http://ssrn.com/abstract=1381502.

Useful links

CATALYST Developments

• CATALYST website:
http://catalyst-fp7.eu
• CATALYST ecosystem of tools:
http://catalyst-fp7.eu/open-tools/
• Assembl:
http://catalyst-fp7.eu/open-tools/assembl/
• LiteMap:
http://catalyst-fp7.eu/open-tools/litemap/
• DebateHub:
http://catalyst-fp7.eu/open-tools/debatehub/
• Edgesense:
http://catalyst-fp7.eu/open-tools/edgesense/
• The CI Dashboard:
http://catalyst-fp7.eu/open-tools/collective-intelligence-dashboard/

CATALYST partners

• Sigma Orionis (Project Coordinator):
http://sigma-orionis.com
• Imagination for People (Scientific Coordinator):
http://imaginationforpeople.org/
• The Open University's Knowledge Media Institute:
http://kmi.open.ac.uk/
• The University of Zürich:
http://www.uzh.ch/
• Wikitalia:
http://wikitalia.org/
• Purpose:
http://purpose.com
• The Collaborating Centre on Sustainable Consumption and Production:
http://scp-centre.org/

CATALYST publications

• Presentations and Research Papers:
http://catalyst-fp7.eu/public-resources-2/presentations-research-papers/
• Reports and Deliverables:
http://catalyst-fp7.eu/public-resources-2/reports-deliverables/

An overcrowded room for CATALYST workshop 'Collective intelligence tools for online communities' during the project first annual event hosted at CAPS2014 (July 1-2, 2014).


Catalyst
catalyst-fp7.eu