

*Collective awareness, crowdsourcing and
search: a business perspective*

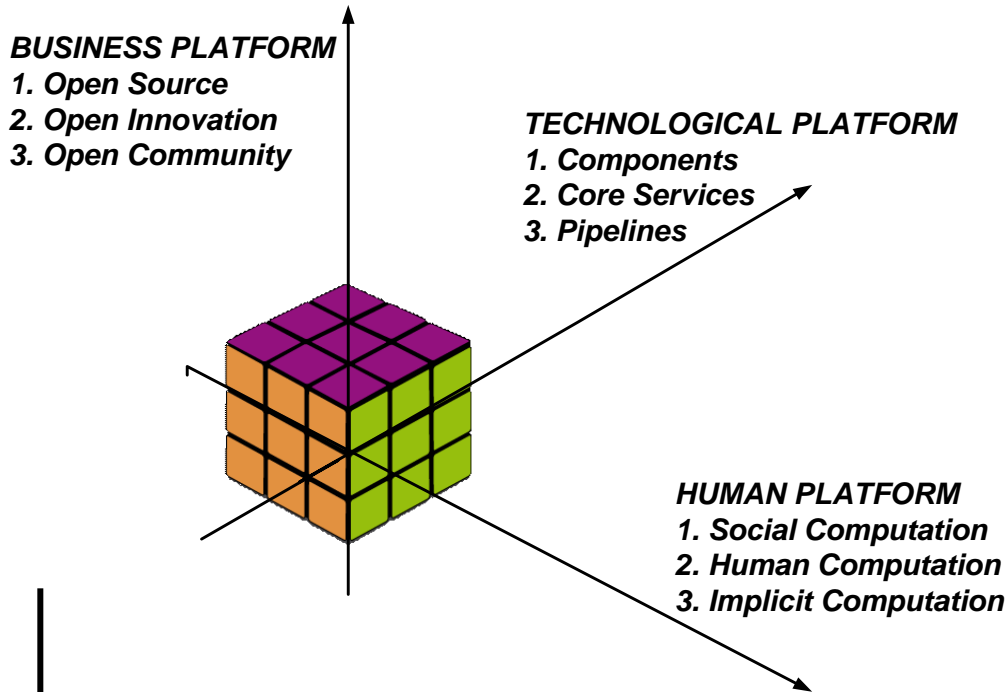
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Engineering SpA

- Evolution between multimedia search and information retrieval
- Open Innovation
- Crowdsourcing and Human Computation
 - Where we came from – *Multimedia Search*
 - Where we are – *Crowdsearching*
 - Where we are going – *Participative wisdom and Collective Awareness*

Our Roadmap

- The Past
 - Multimedia Search – PHAROS, a success story
- The present
 - Improving the interaction – I-Search
 - Crowdsearching – CUBRIK, Glocal, EIT lab
- The Future
 - More business-oriented innovation approach
 - Social Media, Social TV, sentiment analysis for TV
 - Collective awareness as leverage for community creation, business ecosystem and entrepreneurship culture

Introduction: CUBRIK Rationale



“Opening the search box”

Implementing multimedia search in a way that considers collaboration paths requires **“opening the box” of multimedia search engines** for the creation of search solutions **tailored to user-needs in specific domains**

Interworking/integration between different search apps

- Pipelines can be defined hierarchically:
 - Different searches can be combined by pipelines
- Special components will be developed to support federated search
- Different searches in CUBRIK address different types of content (e.g. Pictures, Videos)
- We are considering the overlap in metadata structure during concept and design (e.g. information model)



CUBRIK open source approach



- The default license model for CUBRIK tools will be a business friendly open source license
 - The license decision will be part of the conceptual phase of a component
- To support open innovation, we are open to contributions with commercial as well as open source licenses
 - Some background work cannot be OSS due to existing contracts and business models
We will consider community OSS alternatives.
 - SMILA as integration framework under Eclipse Public License provides a basis for Open Innovation



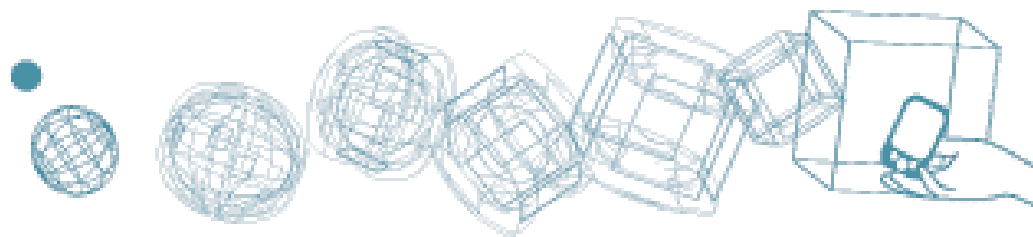
Open Source community support

- We are actively searching for collaboration
 - Open Source
 - Open Content / Creative Commons / Open Access
 - Open Linked Data
- Using the well established Open-X networks of our partners a starting point
 - ENG: SpagoWorld, ...
 - Attensity: Eclipse (SMILA), ...
 - CVCE: Alfresco
- Open Source representatives involved in the project
- We will contribute to the open source community (e.g. via sourceforge)
- We will offer distribution channels for results (e.g. marketplace.eclipse.org)

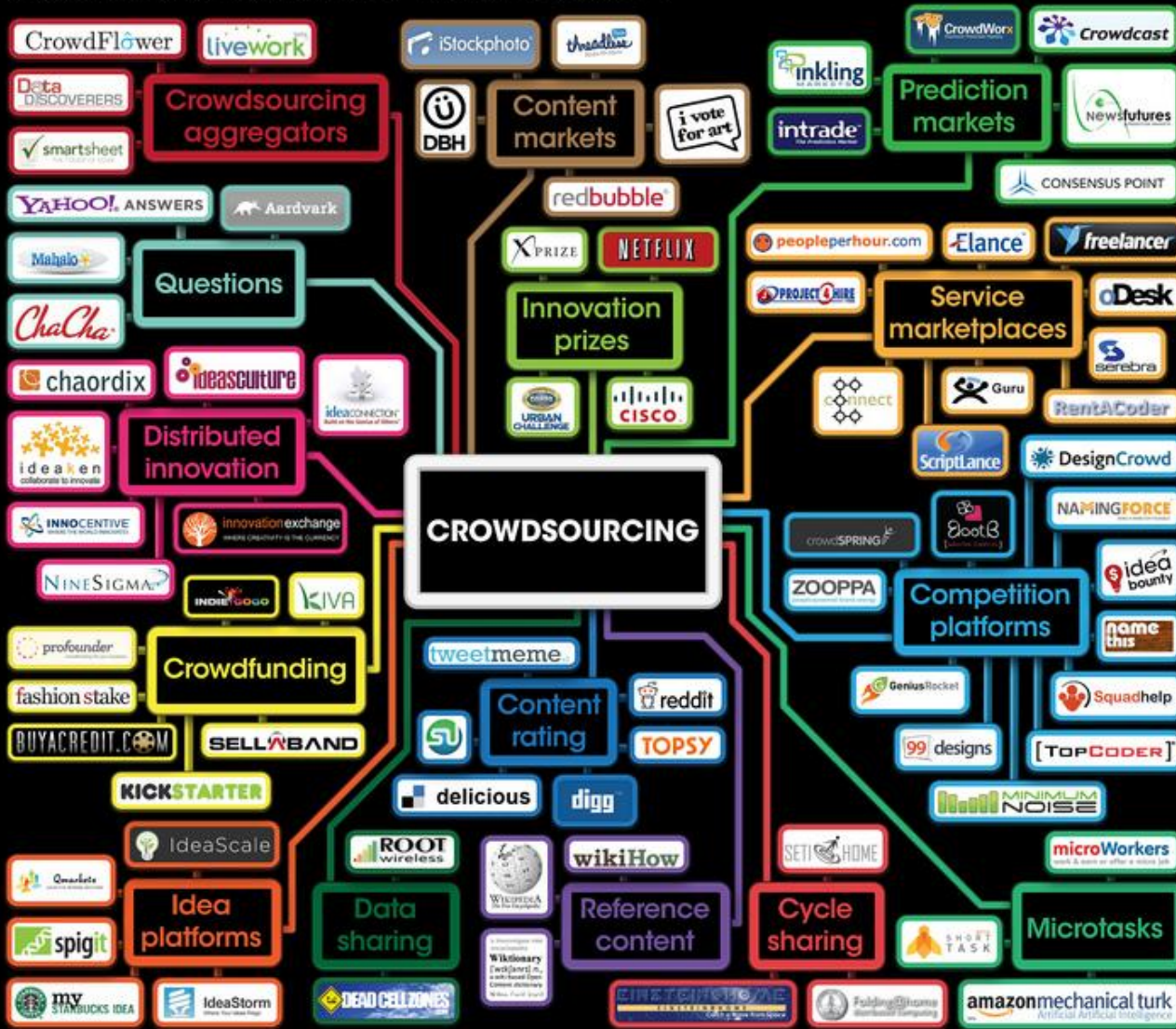


Rationale of use cases

- Rationale for the selection of use case is to create more impact by designing new use cases dedicated to **SME Innovation**
- We already have strong links with many media communities, by these new use cases we will enlarge our impact to new domains&communities: Learning, Citizens, Histories and SME (**7 European industrial associations** already approached)
- CUBRIK search engine use cases stress the usefulness of the CUBRIK platform and how it will be used to build applications that could not be possible until today



CROWDSOURCING LANDSCAPE Beta v1



Common Crowdsourcing Tasks and Examples	
3D object design	Thingiverse
Advertising	IdeaBounty
Business ideas	thebluebird
Clothing	IndieBio
Consumer research	Chitubase
Crisis information	Ushahidi
Data analysis	GETTING HOME
Fact checking	PolitiFact.com
Graphic design	99 designs
Human reading	Capital
Investigative reporting	theguardian
Journalism	Seed
Lending	100
Mapping	Mapbox
Movie reviews	IMDb
Music	Musicmatch
Observation	GALAXY ZOO
Patent research	PatentCrowd
Philanthropy	GoFundMe
Political activism	MoveOn.org
Product design	MUJI
Proofreading	Proofreading.com
Scientific problems	fold.it
Software	Penguin
Software development	RentACoder
Software testing	Test
Stock picking	Marketocracy
Tagging	Google
Translation	facebook
Trends	Trendalyzer
TV programming	current
Word of mouth	BzzAgent
Writing and editing	textbroker

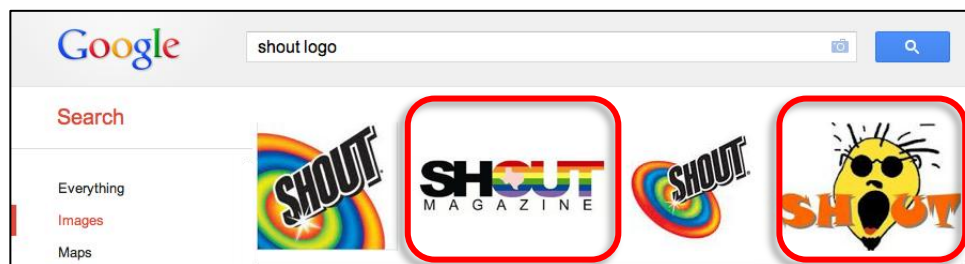
For details, analysis, and discussion go to:
www.crowdsourcingresults.com

Advanced Human Technologies
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A new approach *Crowd searching: human in the loop*



- **Goal:** integrate human and automatic computation to increase precision and recall with respect to fully automatic solutions
- One example automatic logo detection: Object recognition is affected by the quality of the input set of images



Humans in Multimedia Information Retrieval



- **Problem:** the uncertainty of analysis algorithms leads to *low confidence results* and *conflicting opinions* on automatically extracted features
- **Solution:** humans have superior capacity for understanding the content of audiovisual material
 - State of the art: humans replace **automatic feature extraction** processes (*human annotations*)



- Our contribution: **integration** of human judgment and algorithms
 - **Goal:** improve the performance of multimedia content processing

Example of CUBRIK Human-enhanced computation: Trademark Logo Detection



- **Problem statement:** identifying occurrences of trademark logos in a video collection through **keyword-based queries**
 - Special case of the classic problem of *object recognition*



- **Use case:** a professional user wants to retrieve all the occurrences of logos in a large collection of video clips
- **Applications:** rating effectiveness of advertising, subliminal advertising detection, automatic annotation, trademark violation detection

- **CUbRIK as a collaborative awareness platform**
 - CUbRIK has built a “dual-core” platform for processes implementing a harmonic cooperation of humans and machines
 - A CUbRIK “pipeline” consists of tasks: a task can be performed by a machine, by an individual, or by a crowd
- **CUbRIK can be interfaced with any social collaboration tool: social networks (FB, Twitter, LinkedIn already integrated), paid crowdsourcing markets (Microtask), deliberation tools**
- **Embedded in CUbRIK is advanced support for crowd contribution quality monitoring and transparency**

Cubrik architecture



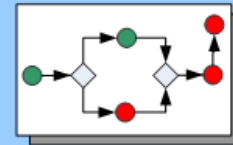
Cubrik Apps: serious games, crowdsourcing, deliberation tools, social network and mobile apps



External Interfaces

USER AND PROGRAMMING INTERFACES

Processes



Data Analysis and Enrichment, Query execution, and Relevance Feedback "Pipelines"

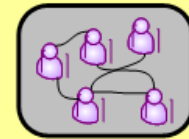
Components and executors



Algorithms



Individuals



Social Networks & Communities

Platform services

Core Services

- Task execution support
- Human computation support
- Storage, distribution, scale
- Traceability, quality control, transparency

New perspective: CAPS

- **Promote and support new application scenarios** based on crowd sourcing, collective knowledge, network intelligence.
- **Define social innovation and collaborative process** based on *social equity, economics and environment*.
- **Deploy a innovation ecosystem approach:**
 - Using existing technology such as Human Computation, Social Media Analytics, Social Cooperation & Deliberation to elicit and select social innovation startup ideas
 - Creating a Sustainable Open Innovation Hub that provides ‘innovators’ with a one-stop-shop for data, applications and tools/guidelines to develop service that enhance sustainability
 - Exploiting the open nature of the Innovation Hub to create a virtuous circle wherein the continuous updating of state-of-the-art content/apps ensures the continuous attraction of new users (including stakeholders in search of consultancy) who in turn provide new content/apps – thereby contributing to sustainability

- **Adopt a domain agnostic methodology** in order to integrate in the future many different domains with a plug and play approach (health, inclusion, micro-finance, etc.)
- Implement **new social innovation applications in different domain** (Energy, Mobility, Eco-Environment, Food..) using the CUBRIK platform
- **Experimentation and validation** of the Application in user-centric testbeds and practical showcases
 - connecting different national start-ups incubator: serving as real-world testbeds for social innovation products and services
 - providing the operational frameworks for ongoing and sustainable exploitation of project results and services.
- Foster the adoption of social innovation processes and models by European Start-ups (**social innovation transfer**)

Thanks !!!