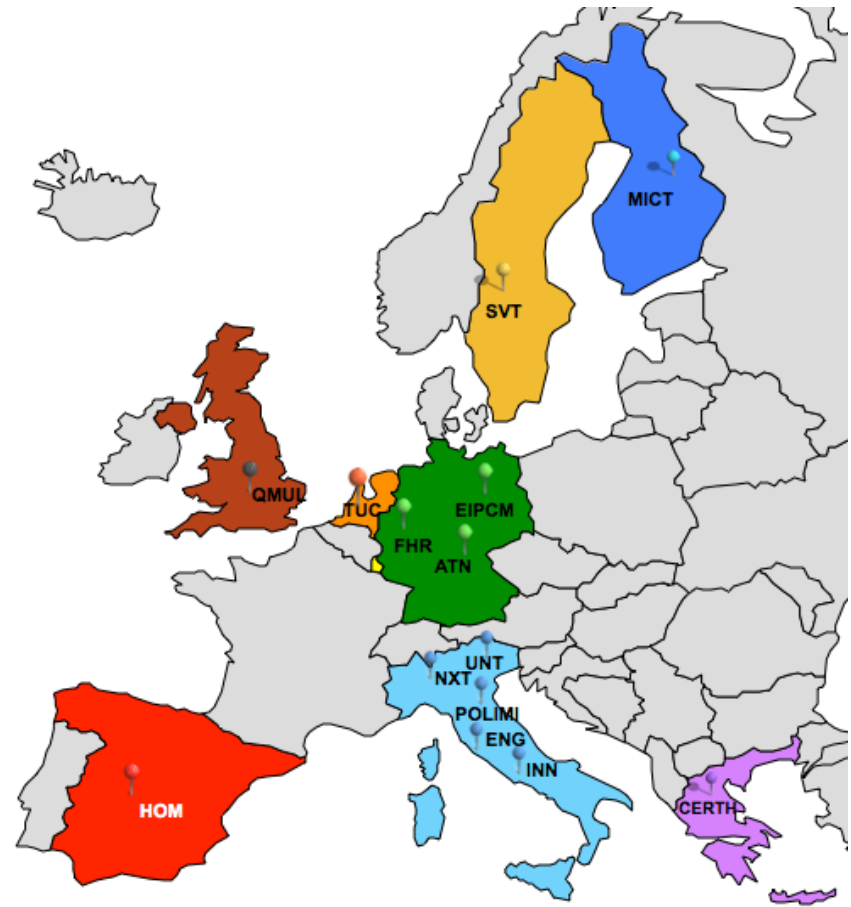# CUBRIK: Cube metaphor of Search

Turin 28.09.2011

Vincenzo Croce – *Engineering SpA*

Project ID Card

- Name: **CUBRIK - Human-enhanced time-aware multimedia search**
- Total Costs: 8.900 k€
- **Total EU contribution: 6.834 k€**
- Duration: 36 Months
- Start : October 2011
- Coordinator: Egineering Ingegneria Informatica
- Partners
    - Università di Trento
    - Delft University of Technology
    - Queen Mary, University of London
    - Gottfried Wilhelm Leibniz Universitaet Hannover
    - Politecnico di Milano / Web Model
    - Centre for Research and Technology Hellas / Informatics and Telematics Institute
    - Nexture
    - Microtasks
    - Attensity
    - Fraunhofer IDMT
    - Innovation Engineering
    - Homeria Open Solutions S.L.
    - Centre Virtuel de la Connaissance sur l'Europe
    - European Institute for Participatory Media

CUBE metaphor

"Business Ecosystem"
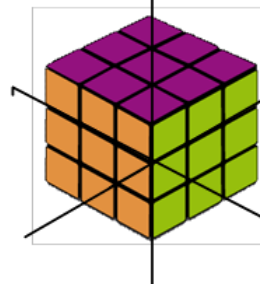the vision is to provide an **open stage for innovators**

BUSINESS PLATFORM
1. Open Source
2. Open Innovation
3. Open Community

"Technology"
CUBRIK vision is to provide a **platform for definition and execution of multimedia processing pipelines** and "mix and match" of technologies and rich set of open components.

TECHNOLOGICAL PLATFORM
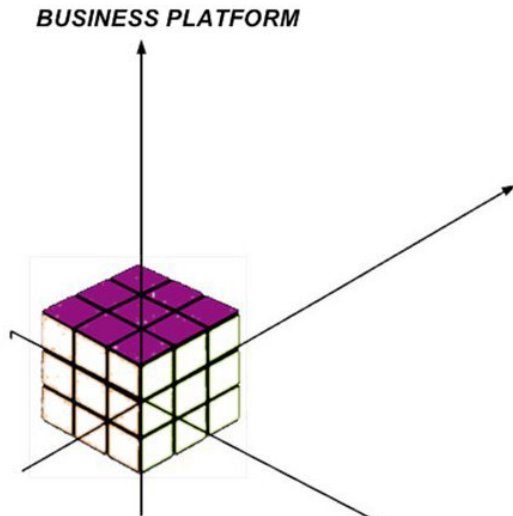1. Components
2. Core Services
3. Pipelines

HUMAN PLATFORM
1. Social Computation
2. Human Computation
3. Implicit Computation

"Human"
CUBRIK vision is to **incorporate rather than emulate human capacities and social interaction** in all the processes and at all levels in an open multimedia search platform.
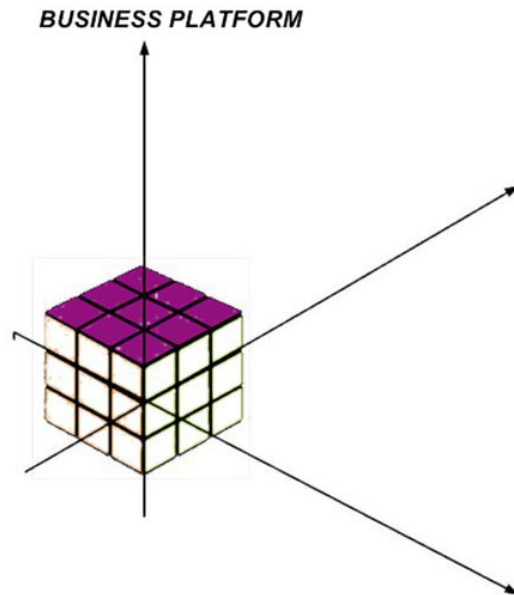
Business Platform

BUSINESS PLATFORM

> **"Business Ecosystem"**
> the vision is to provide an **open stage for innovators** for deployment of new algorithms, components and solutions for multimedia search, **by reusing a rich set of open source components, content collections** and **datasets**, so as to constitute *communities of practice*, where collaboration fosters the emergence of new business models for deploying multimedia search solutions in vertical markets.
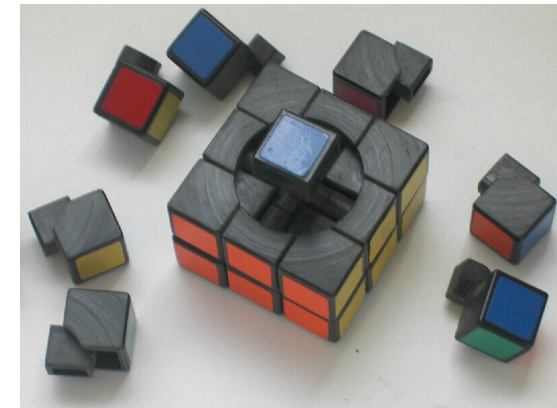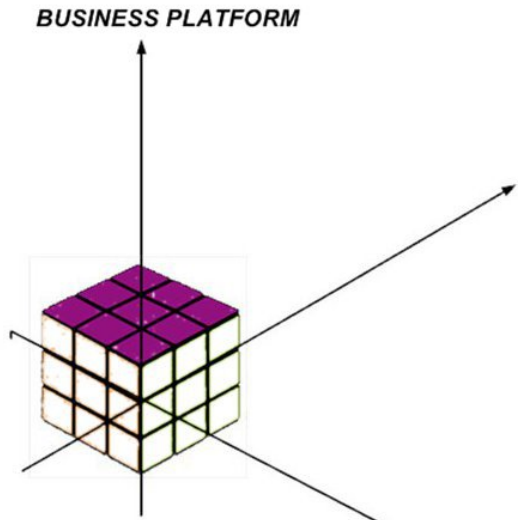
Business Platform

BUSINESS PLATFORM

> **"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**

Business Platform
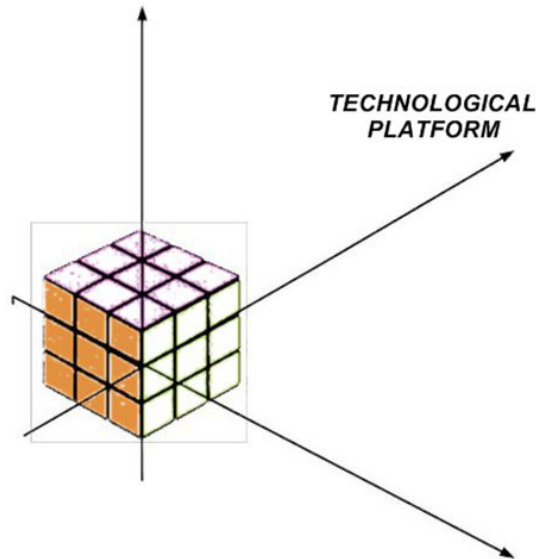

BUSINESS PLATFORM

"Opening source"
- Open innovation … **we are open to both commercial as well as open source licenses**.
- Support the user in integrating components (e.g. App-Store-style downloads)
- business friendly open source license by default
- Relying on established Open-X networks
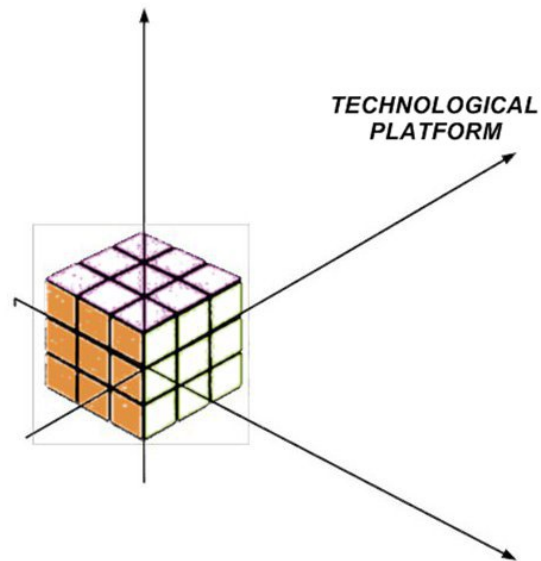
Technological Platform

TECHNOLOGICAL
PLATFORM

"Tech"

3 small cubes for **integration of data, processes and human computation**

- Pipelines
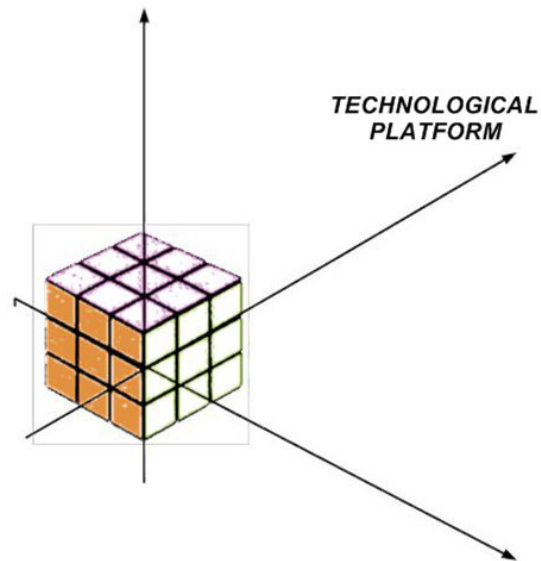- Components
- Core services

TECHNOLOGICAL PLATFORM

"Pipeline"

- Hierarchical structuring of searches via pipelines.
- Pipelines for
    - Content Analytics and Enrichment
    - Query Execution
    - Feedback acquisition and Processing
- Tools for run time monitoring and debugging of pipelines
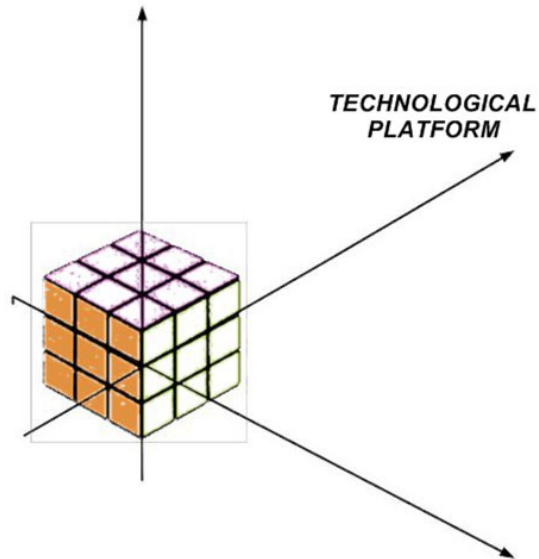
Technological Platform

TECHNOLOGICAL
PLATFORM

"Components"	
• Open source third party components	
• Support tasks associated to human executors	
• Components for	
• Content Analytics	
•Query execution	
• Relevance feedback	

Technological Platform

TECHNOLOGICAL PLATFORM

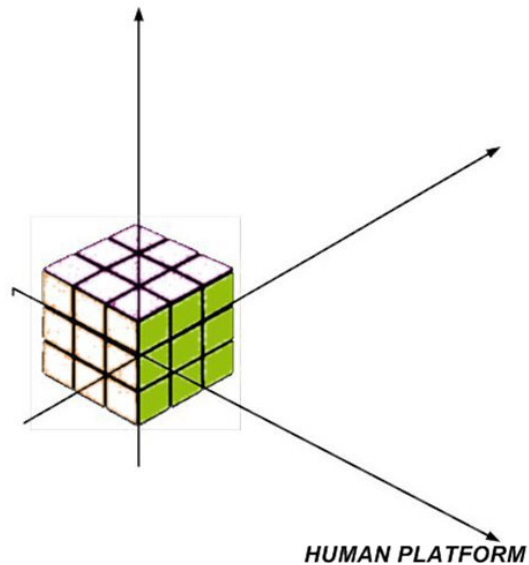"Services"
- Collaboration workspace for developers
- Deployment services
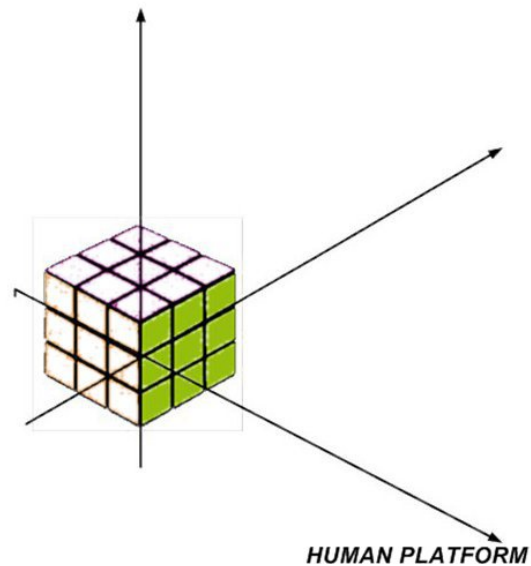- Configuration services

Human Platform

HUMAN PLATFORM

"**Human** "
- Semantic gap filling in problem
- Media automatic comprehension is shallow
- Human in the loop in all stages
  - features extraction
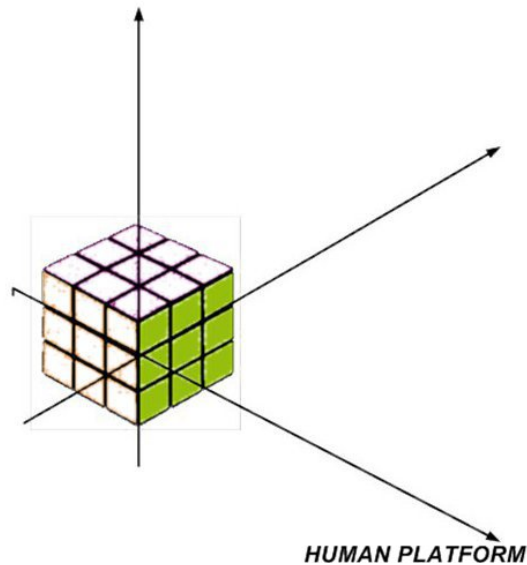 - Search
  - Validation

Human Platform

HUMAN PLATFORM

"Social"

- Social Media interaction processes
    - exploit tagging and content annotation
- Ontological structure extraction from social data
- social graphs modeling for knowledge extracted
- analysis of social network for crowd sourced tasks optimization

HUMAN PLATFORM

"Implicit computation"
- Explicit relevance feedback
- Implicit feedback collection as physiological data
  - cognitive and an affective states
- Games with a Purpose
  - image tagging
  - object recognition
  - shot detection, ..

How to Play

1 You and a partner see the same image.

2 Each of you must guess what words your partner is typing.

make a new
Tree

Contacts

- soon available http://www.cubrikproject.eu/

- **Vincenzo.croce@eng.it**

ENGINEERING