

I-SEARCH



I-SEARCH: multimodal content search engine

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■ Presentation:

- STREP project, duration: 3 years, start: January 2010
- Partners:

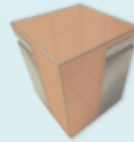
Integrators



Google™



coordinator



INFORMATICS & TELEMATICS INSTITUTE
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Research & Technology



Dissemination

JCPC

Content providers

EasternGraphics
visualize your business



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■ **Presentation:**

- I-SEARCH aims to provide a framework for indexing complex objects by capturing different modalities
- I-SEARCH objective is to develop different use cases showing benefit of combining multiple modalities in search engine industry



■ Presentation:

- Different formats are targeted: text, images, videos, sounds, music, 3D/2D content...
- Additional information will be combined like real world parameters (temperature, geo coordinates) and social meta information



■ Methodology:

- Content Description and characterisation:
 - RUCOD (Rich Unified Content Description): rich format for representing multiple descriptors of content objects



■ Methodology:

- Integration of advanced techniques in multimedia mining:
 - Text: extraction of entities and ontology concepts
 - Image: colour descriptors, image objects detectors, contour detection, interest points
 - Video: visual object description
 - 2D/3D: multiview descriptors (compact and aligned depth), combined depth silhouette radial (DSR)
 - Audio: statistical spectrum, Bark bands, inter onset intervals, onset times, beat

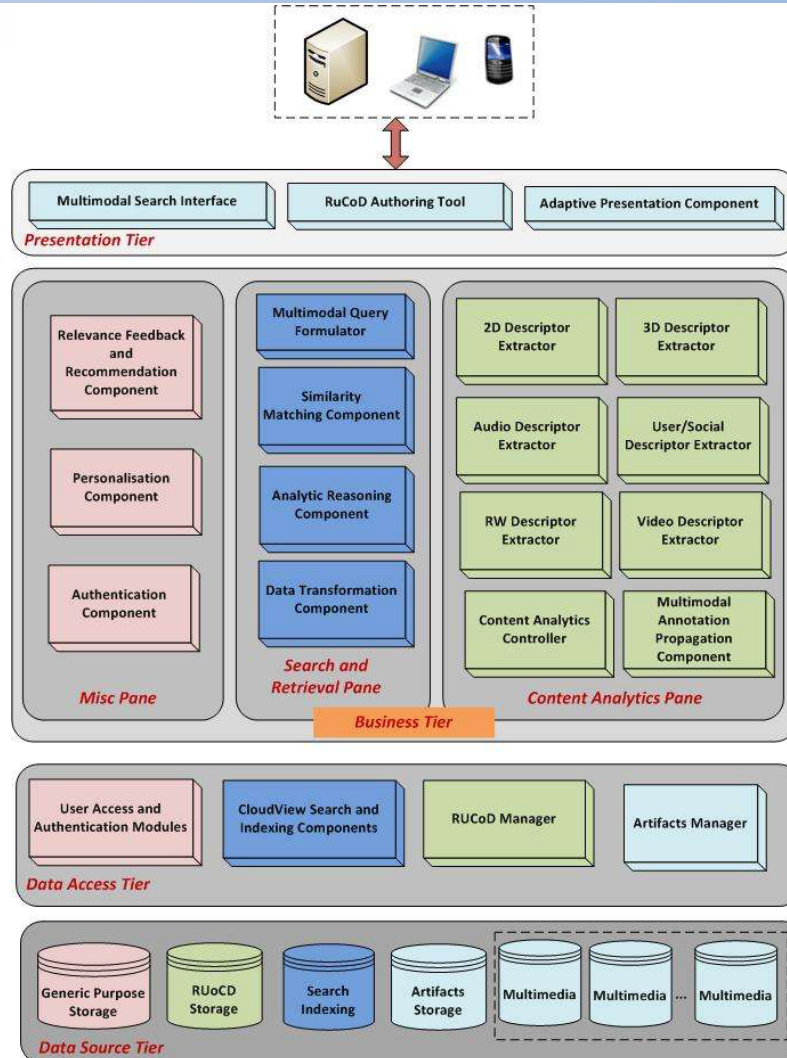


■ Methodology:

- Search technology :
 - Combine flat text indexing and content object indexation (vectors)
 - Visual analytics techniques as a support tool for improving search results quality and readability
 - Search results visualization adaptive presentation using advanced data visualization techniques
- Advanced interfaces:
 - Mobiles interfaces
 - Integration of multimodal input widgets



■ Architecture:





■ Use cases:

- We designed 7 use case scenarios :
 - UCS1: Music search
 - Music material search sharing common features using: tapping, singing, ... modalities
 - UCS2: Collective Music search
 - Use alternative modalities to retrieve music: mood, dancing gestures,...
 - **UCS3: 2D/3D Furniture objects search**
 - UCS4: Smart phone search
 - Images and video search using modalities input of a smartphone



■ Use cases:

- We developed 7 use case scenarios :
 - UCS5: Mutlimodal shopping artefacts search
 - Search articles for shopping using image similarity, sketching, ...
 - UCS6: 3D Game components retrieval
 - Multimodal search of 3D game components for professionals to enhance existing 3D games scenes.
 - UCS7: Smart phone search
 - Multimodal search of 3D characters and avatars by gamers



■ Professional furniture use case:

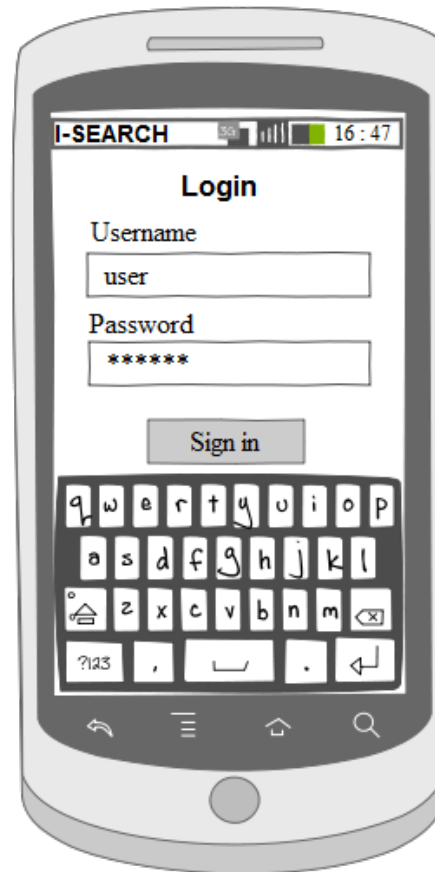
- Context:
 - Furniture modelling and retrieval is focused on dealers requirements and not end consumers.
 - Complex format for representing 3D/2D models of furniture (OFML, DWG, SAP VC...).
 - Search for end consumers offers limited options and features to retrieve material (text queries, matching of article numbers...)



■ Professional furniture use case:

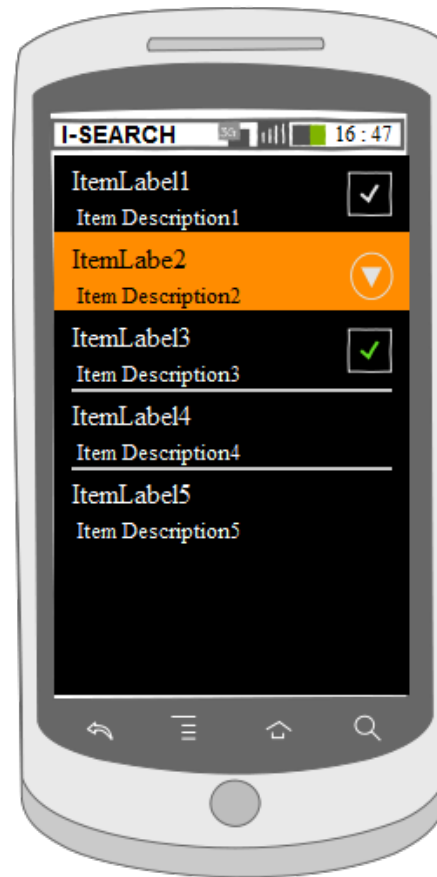
- I-SEARCH approach:
 - Add multimodality in search:
 - Similarity search: upload a furniture image, video and search similar material
 - Sketch features: sketch shapes and submit it as query to retrieve related furniture
 - 3D similarity features: for professional provide 3D similarity functionality to retrieve similar 3D objects to a given 3D model
 - Integrate real world information while performing search like geo coordinates to improve results quality
 - display only the results delivered in the area where search have been performed
 - Reducing costs by selecting optimal manufacturers (distance, costs...)

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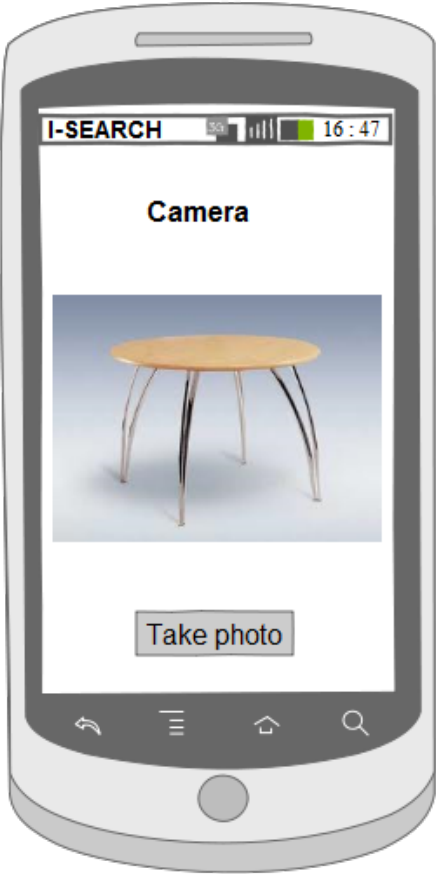
login screen

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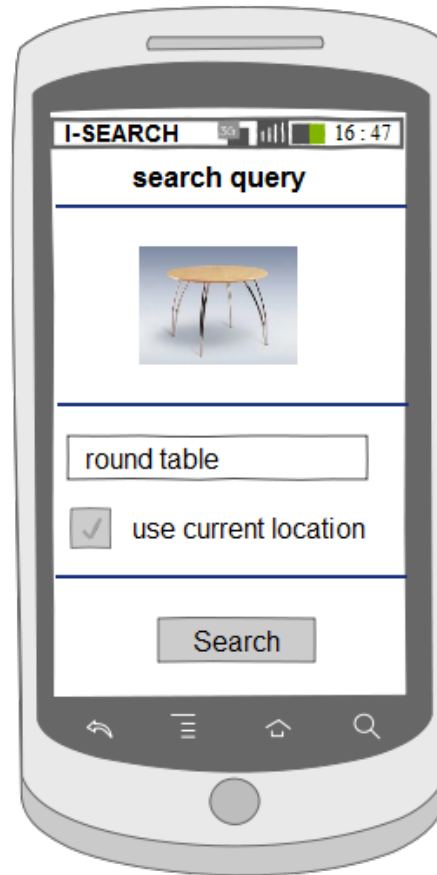


User preferences

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query image

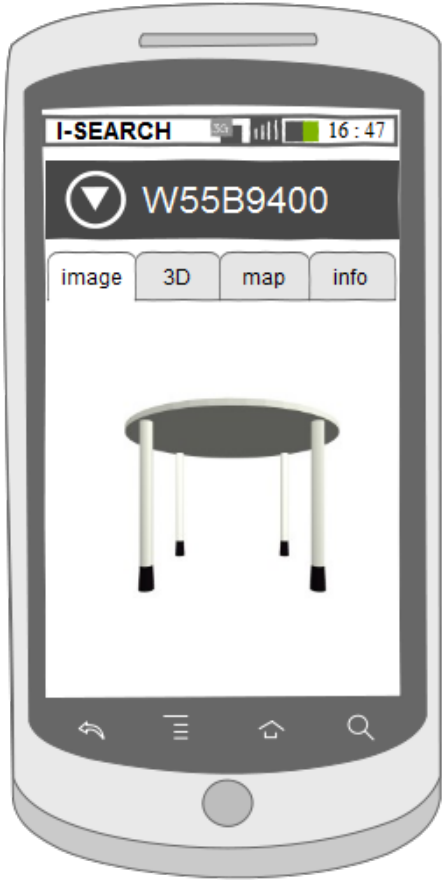
free text

Geolocation

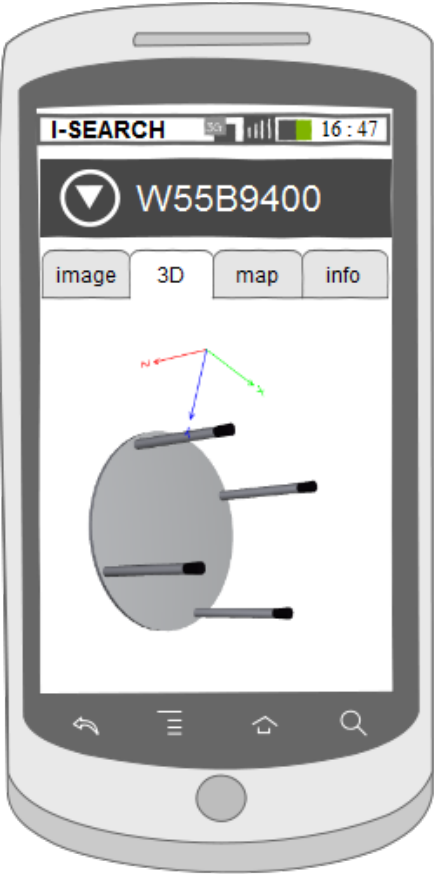
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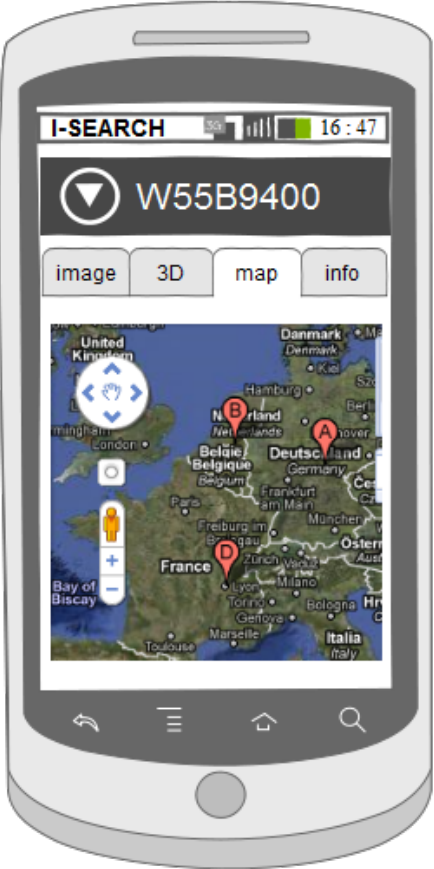
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