2023

AHFE International

Smart tools, technological innovation, transdisciplinary research, and collaborative knowledge design.

The KBAI Project.

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The KBAI Project.

A tool for individuals and organizations store and manage knowledge, with assisted reasoning support

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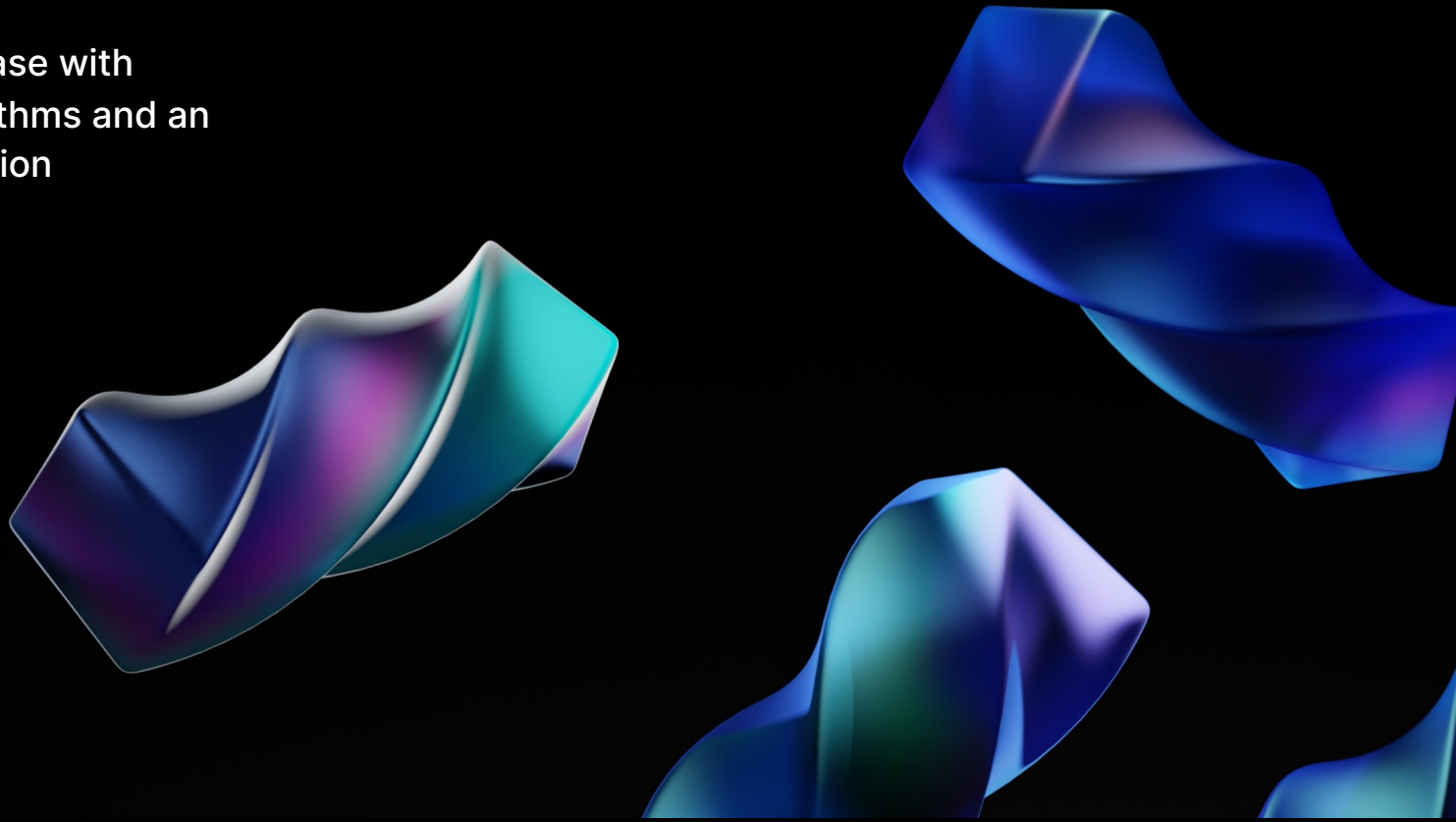
Knowledge Matters

AI Knowledge base with reasoning algorithms and an intuitive interaction



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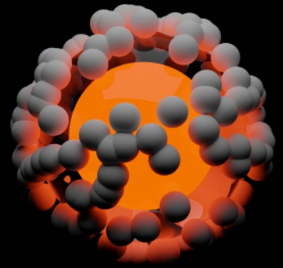
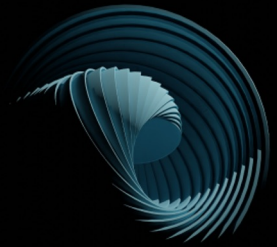
Research with purpose

Collect information on recent research, identify challenges, explore new alternatives, find innovative solutions



Keep the focus on the practical application and its utility



Materialize the ideas into fully functional products.

Transdisciplinary team challenge

AI Research

- Gather the state of art for AI technologies to be applied;
- Identify the tools to use considering the identified case studies;
- Specify and configure the algorithms to integrated in the reasoning tool;
- Test and validate the results for the automated mechanisms implemented.

Design & Innovation

- Make a comparative analysis on the existing knowledge editor interfaces;
- Identify the interaction requirements for the selected case studies;
- Concept and design the interfaces for the knowledge editor and query tool;
- Test and validate the UI for the implemented tools;
- Create explanatory contents.

Development

- Architecture, design and implement the knowledge base;
- Implement the knowledge editor;
- Implement the tools and applications specific for the selected case studies;
- Test the system performance and security;
- Deploy a product ready for final consumers.

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Project timeline

April
Project Setup

June
Data structure & first API
First editor prototype

July
First case study prototype

August
Full research team setup
Second case study prototype

November
AI state of art
Product/UI design

February
Second editor prototype
Reasoning first prototypes

April
Case study deployment and evaluation

June
Final releases

Transdisciplinary team work

AI Research Design & Innovation Development

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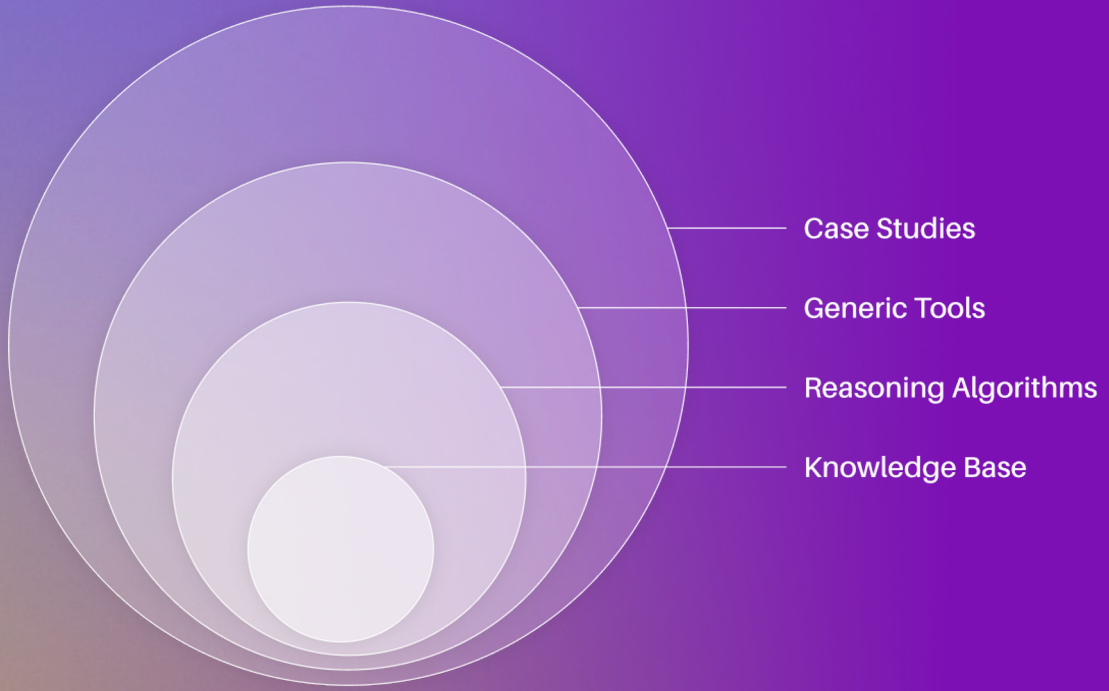
Transdisciplinary team work

AI Research Design & Innovation Development

THE PRODUCT.

A tool for individuals and organizations store and manage knowledge, with assisted reasoning support

Layer-based approach



Main AI fields of research

Reasoning

Automatically update the knowledge base with Case-based Reasoning and Believe Revision algorithms

- Identify patterns to transfer knowledge between different cases;
- Review the belief in facts based on new knowledge;
- Keep a time track on the knowledge changes.

Machine Learning

Apply Machine Learning to update the knowledge base representation off user profiles

- Identify scenarios where ML can be applied and required inputs;
- Merge the results from ML with an explainable knowledge base.

Conversation

Guide a Chat-bot Conversation with the knowledge base content

- Identify the conversation context based on the knowledge about the user and the initial question
- Build the conversation script from the knowledge base
- Query the knowledge base through the chat-bot.

Main Design & Innovation challenges

Create a **simple and intuitive interaction** with the knowledge bases that makes it comfortable for the users to share their knowledge and make questions

Design & Research

- Identify the conversation context based on the knowledge about the user and the initial question
- Build the conversation script from the knowledge base
- Query the knowledge base through the chat-bot.

Design UX/UI

- User Experience Design & Interaction
- Interface Design
- Information Design
- Visual Communication Design

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Main Design & Innovation challenges

Create a **simple and intuitive interaction** with the knowledge bases that makes it comfortable for the users to share their knowledge and make questions

Strategic Design

- SWOT analysis (windows of opportunity and constraints)
- Product Distinctive Factors (User & Market) & Innovation R&Di Strategy
- Collaboration & Planning

Communication Design & Advertising

- Branding
- Promotion and delivery of the developed product (target audience)

User Experience.

Create products that provide **meaningful and relevant** user experiences.

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5 Elements of User Experience

1. Strategy

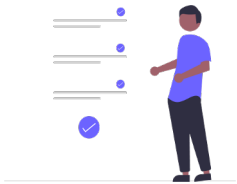
Who - Personas
Why - Problem

3. Structure

How - It works &
We interact

5. Surface

Visible Elements -
What users see
and interact with



2. Scope

What - Solution &
What it does

4. Skeleton

Wireframes - First
interfaces

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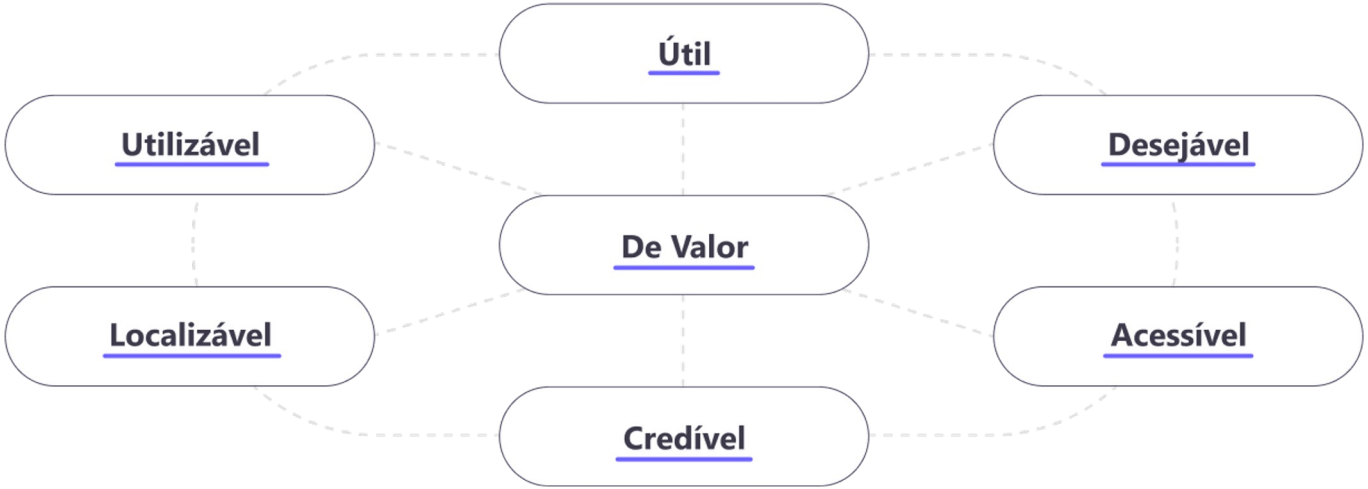
User Experience Principles



The Interfaces.

The before and after, through the UX/UI process

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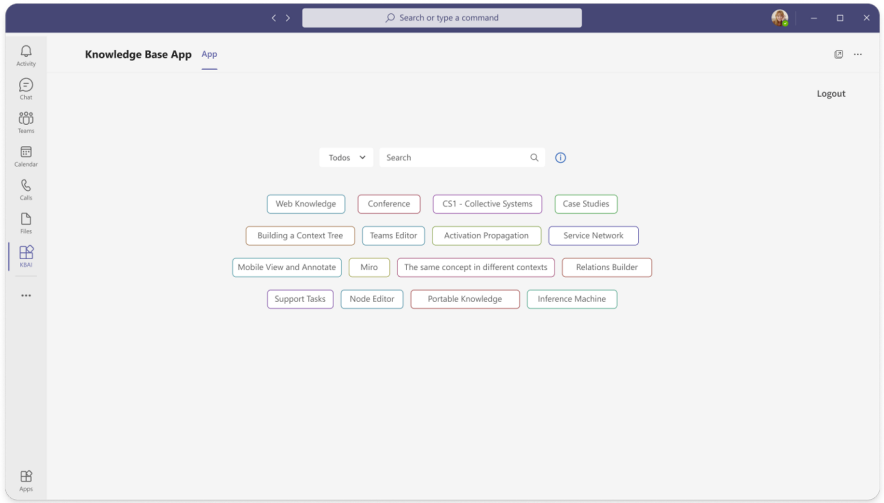
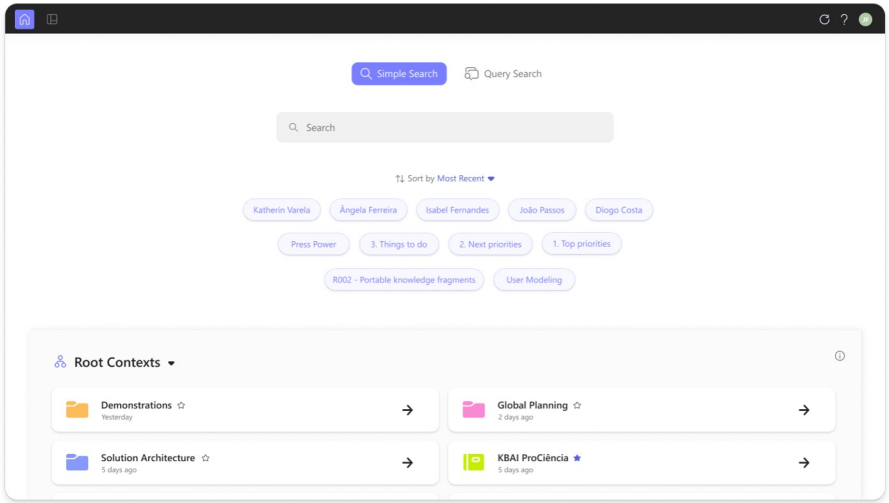
KBAI Browser

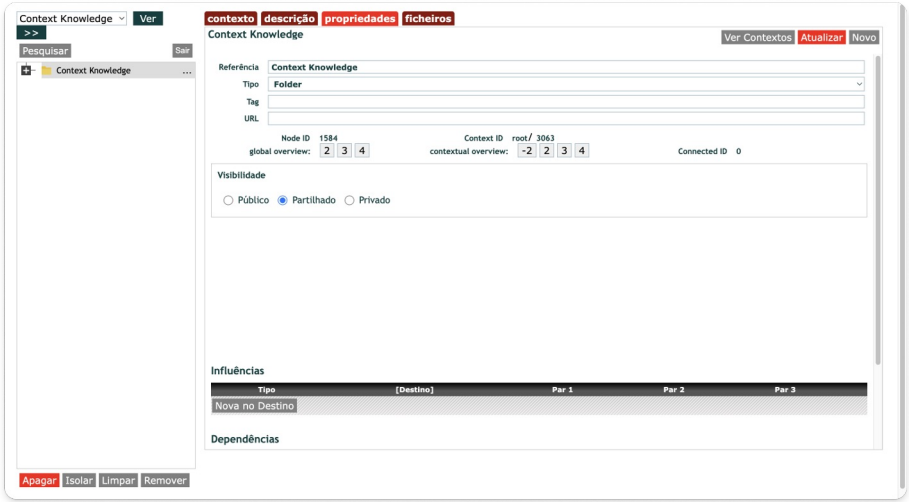
Before & After

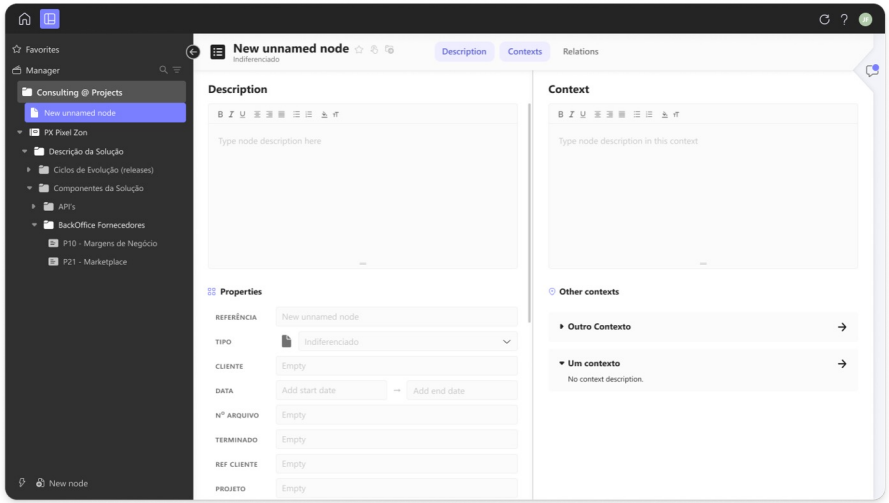




KBAI Editor

Before & After





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The Case Studies.

Applying a modular interface to different case studies

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Tourist Profiling

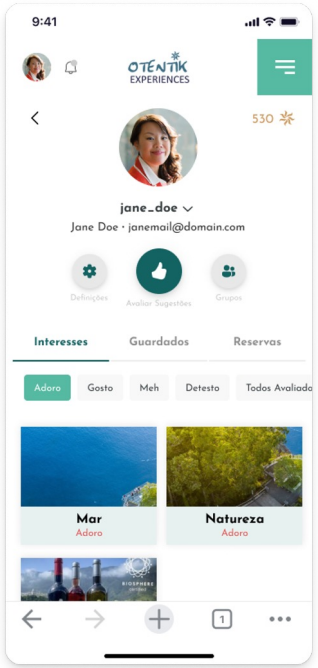
Madeira Selection

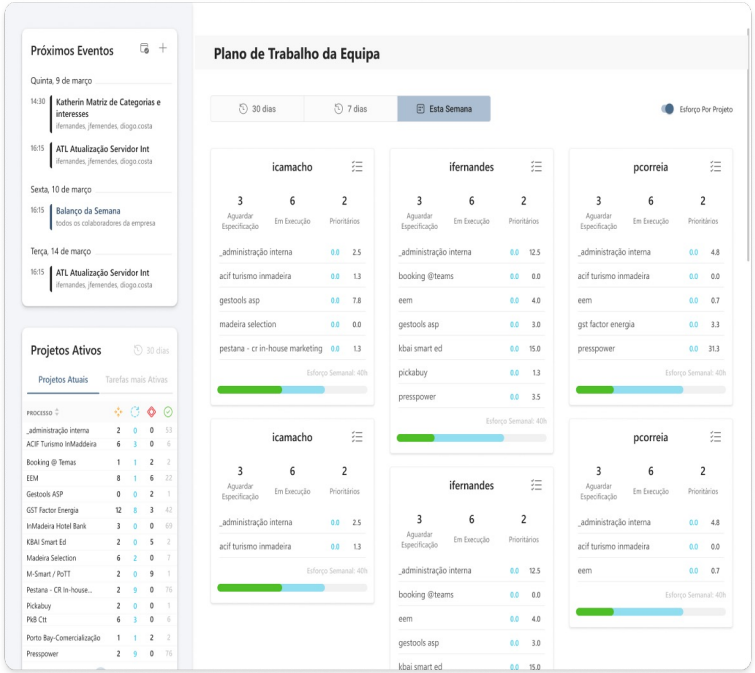
Project Management

GesTools

My Life

A personal assistant





Thank you for your attention

https://kbai.org/

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