

izertis

WORKSHOP REPORT



November 28, 2019, Spain

KBS-Weld Project: Knowledge-based System for Welded Structures and Technologies

Project Ref.: COFUND-MANUNET III - KBS-Weld

CONTRACT no. 25 from 01/03/2018



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**YOUR
FUTURE,
OUR
CHALLENGE.**

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1 EXECUTIVE SUMMARY

This report includes the results of the KBSWeld Project Workshop held at the facilities of Izertis, on November 28, 2019. The structure of the workshop was as follows:

1.1 Workshop Structure

KBSWeld Workshop in Spain

**KBS-Weld Project: Knowledge-based System for Welded Structures and
Technologies**

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WORKSHOP AGENDA OVERVIEW

Venue: Izertis Headquarters: Avda del Jardín Botánico, 1345, Edificio Intra 1, Office 5, Gijón, Spain.

Thursday, 28th November 2019, starting on 09⁰⁰, local time

KBSWELD WORKSHOP

Contents

9:00h	Registration of participants Welcome Breakfast Plenary session
9:30h	KBSWeld Project Presentation Plenary Session
9:45h	Prediction of imperfections and mechanical properties in the GMAW process Authors: Alin Constantin Murariu; Aurel Valentin Birdeanu; Radu Ovidiu Zaporozjan Plenary Session
10:15h	KBSWeld Software platform presentation Plenary Session
10:30h	Design Thinking: Warm-up: The bridge over Kwai River Workshop
11:00h	Design Thinking: Customer Value Map Workshop
12:00h	End of the Workshop. Workshop

Figure 1: Workshop Agenda



Knowledge-based System for Welded Structures and Technologies

Project Ref.: COFUND-MANUNET III - KBS-Weld



The general objective of this workshop was the presentation of the KBS-Weld project and to study the following steps after its conclusion.

For this, the workshop was first structured with a general presentation of the project to the participants, then the experiments performed were presented and as the variables of the welding process have a high influence on the tests to be performed and their modelling for implementation of the expert knowledge

Next, the software platform developed was presented to the attendees and its operation and main functionalities were explained.

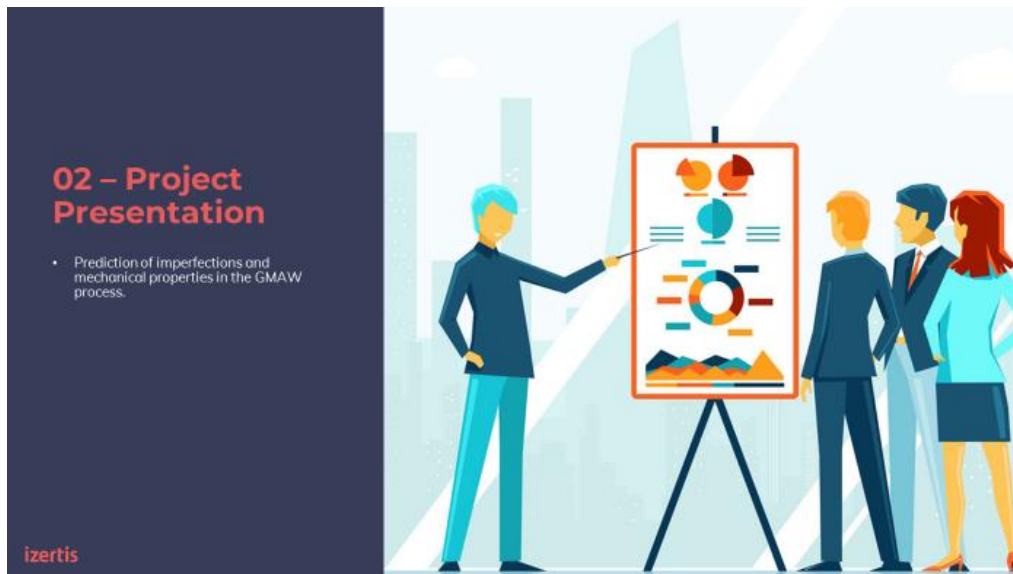
Finally, a Design Thinking workshop was held in which the user value map was studied so as to allow us to detect strengths and improvements to the platform.



Figure 2: Workshop participants

2 WORKSHOP

2.1 KBSWeld Project Presentation



KBSWeld: Knowledge-based System for Welded Structures and Technologies

Project abstract

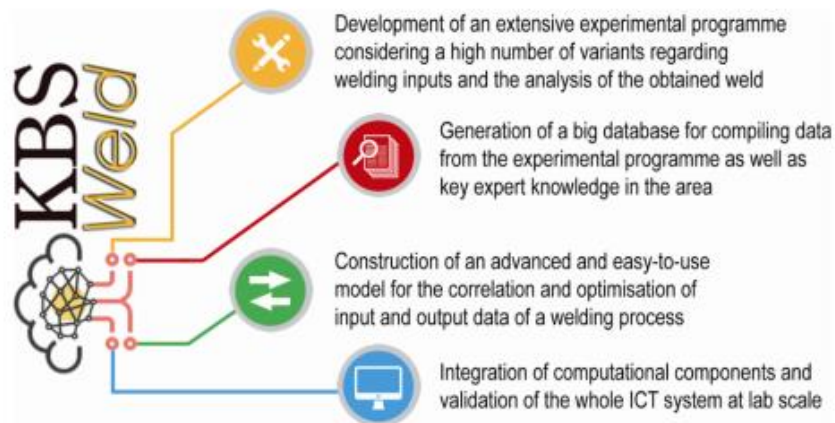
Welding is an essential manufacturing process performed in almost every major industry. Therefore, weld quality and integrity are critical to safety in an extensive range of products and structures.

The KBS-Weld project aims to develop a knowledge-based system functioning as a computational support for the planning of the welding process, allowing the end-users to choose the best combination of welding materials, welding technologies and welding parameters to produce a welded structure with the required properties.

Being designed to reduce the lead-time and the direct influence of the human factor in the welding processes, as well as to increase the credibility of the results, this system will address some of the main needs of the SMEs involved in the manufacturing activities specific for the domain of interest that are highly demanding and with long term significant consequences on product's quality and safety.

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.
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KBSWeld: Knowledge-based System for Welded Structures and Technologies



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2.2 Paper presentation

A presentation about “**Prediction of imperfections and mechanical properties in the GMAW Process**” was performed by Sam Robotics and ISIM.

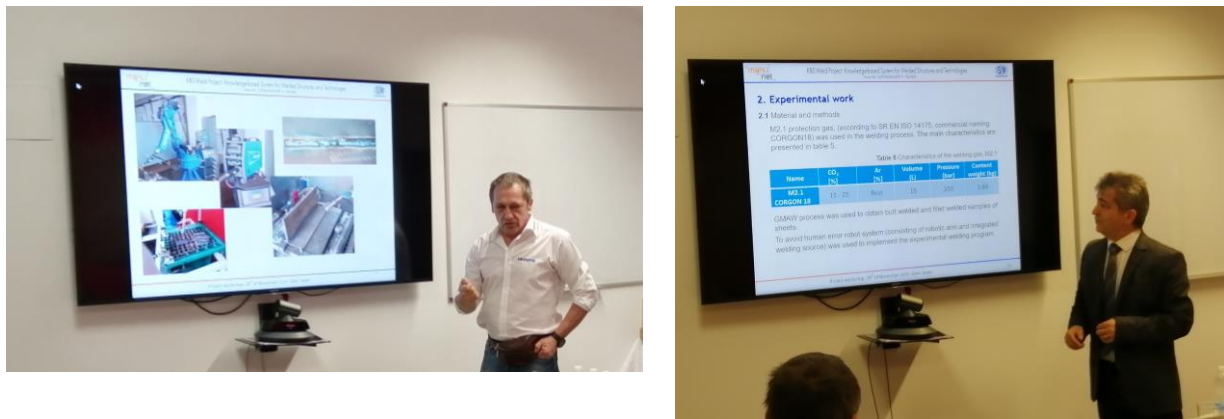
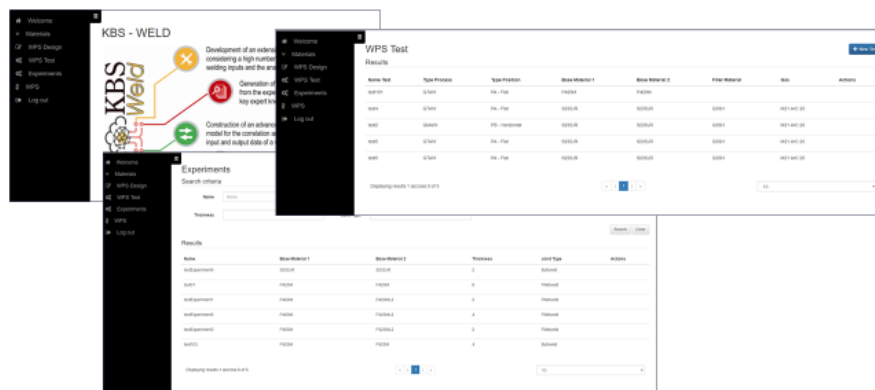


Figure 3: Paper presentation

2.3 Software Platform Presentation

KBSWeld: Knowledge-based System for Welded Structures and Technologies



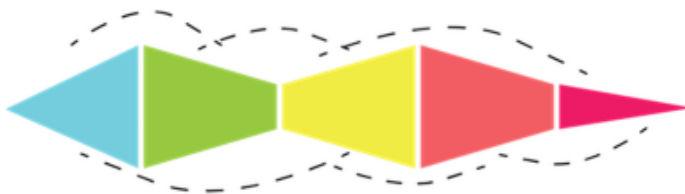
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2.4 Design Thinking Workshop

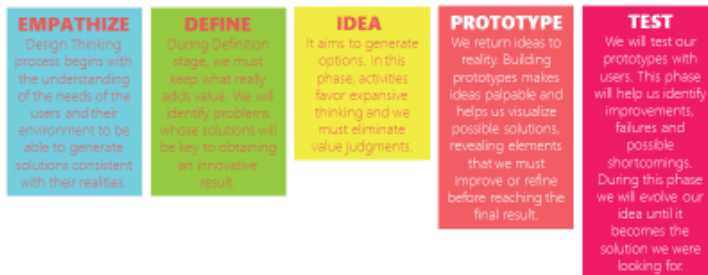
The workshop begins with a brief introduction to design thinking, which explains its methodology and clarifies the expectations of the tool and the dynamics.

Design Thinking - ¿How?



It is applied in sessions in which one looks for:

- Diverge - converge
- Wrong fast and cheap.
- Ask questions not asked
- Method for creativity (order chaos).
- Pragmatic in the background.

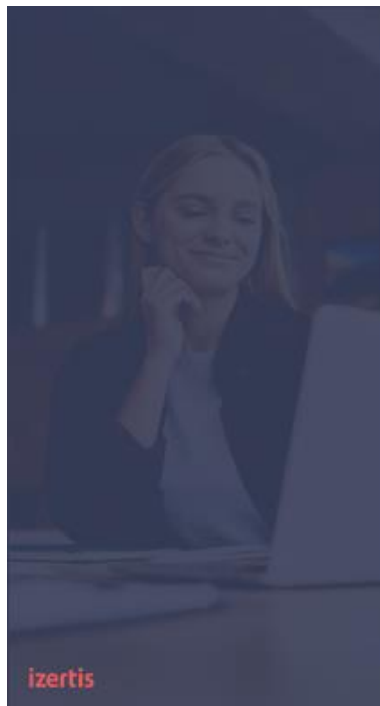


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Figure 4: Design Thinking Introduction

2.5 WARM-UP – Bridge over Kwai River



Warm up : “Bridge Over Kwai River”

Rapid prototyping.

How to play?

We make two or three teams, each team has two chairs, a tennis ball, a newspaper and duct tape.

THE CHALLENGE

Build a bridge between the two chairs using the materials and through which you can cross the ball in a limited time.

WHO WINS?

The team that manages to make the longest bridge and support that the ball crosses from one side to the other wins.

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Figure 5: Warm-up rules

This warming seeks several objectives, on the one hand, to activate the participants and break the inhibition, on the other hand, to demonstrate that to solve the same project different approaches may be valid, and finally, to show the need for rapid prototyping, that is, to make mistakes. fast and cheap, to finally reach a minimum viable product quickly.



Figure 6: Participants during the warm-up

2.6 Workshop Teams

Team A	Team B
Raquel García – Innovation expert	Joaquin Cabezas- Software Developer
Jose Antonio – Data Scientist	Gillermana Bea - Innovation
Hugo Pintado – User Experience	Sara Lopez – Software Engineer
Alejandro Torrecilla – Software developer	Radu – Sam Robotics
Alin Muriaru - ISIM	Jesus Alvarez – IT expert.

2.7 Customer Value Map

After this brief dynamic, we work on building the product value map. Confronting the user with the characteristics of the product that give solution to their needs.

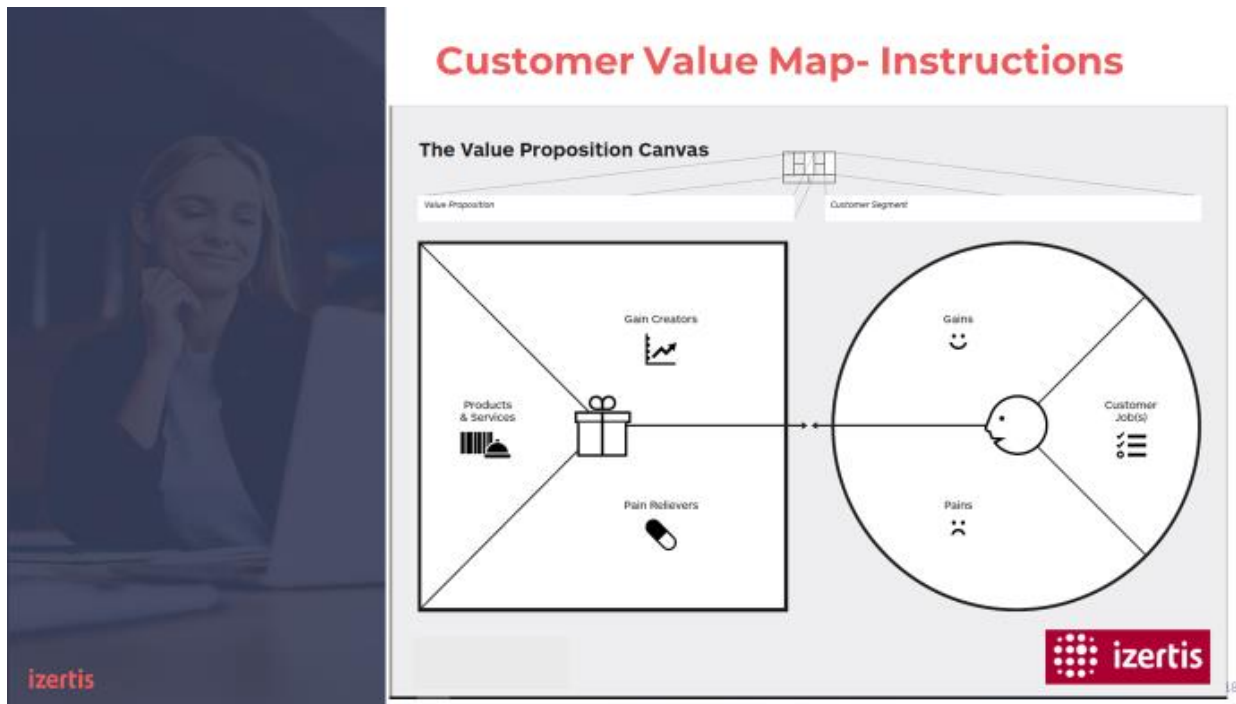
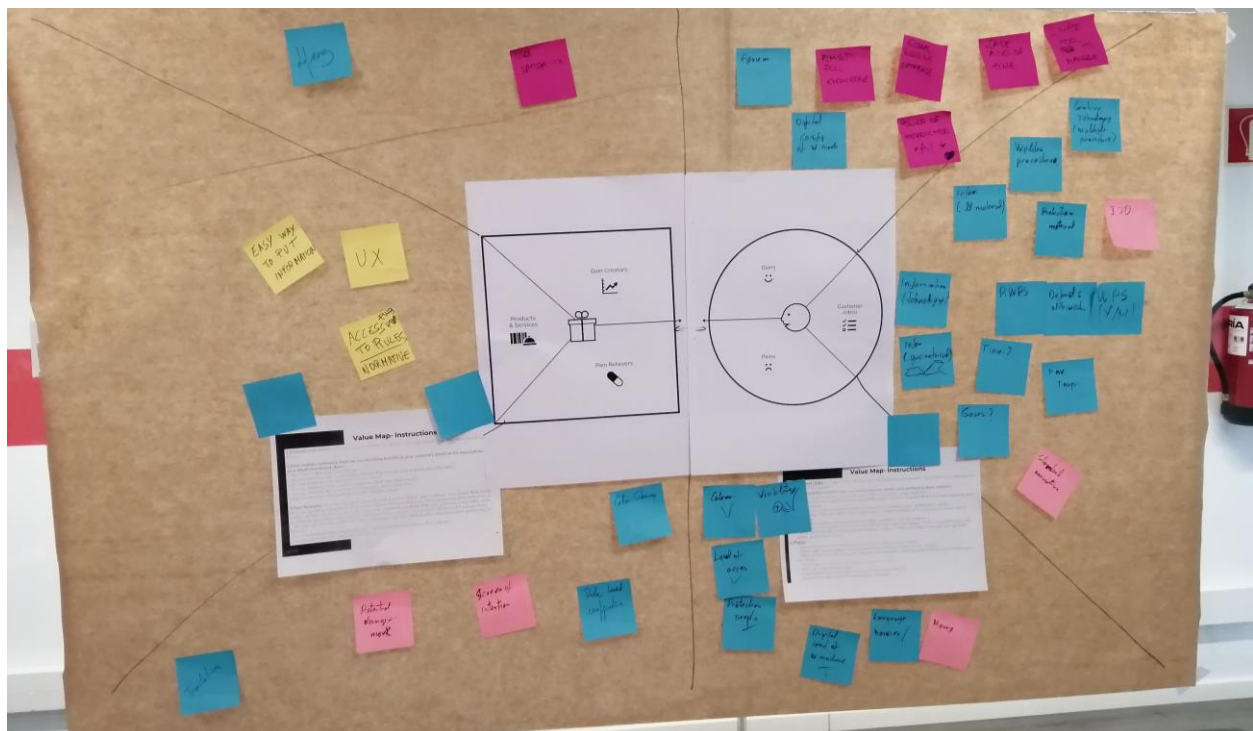
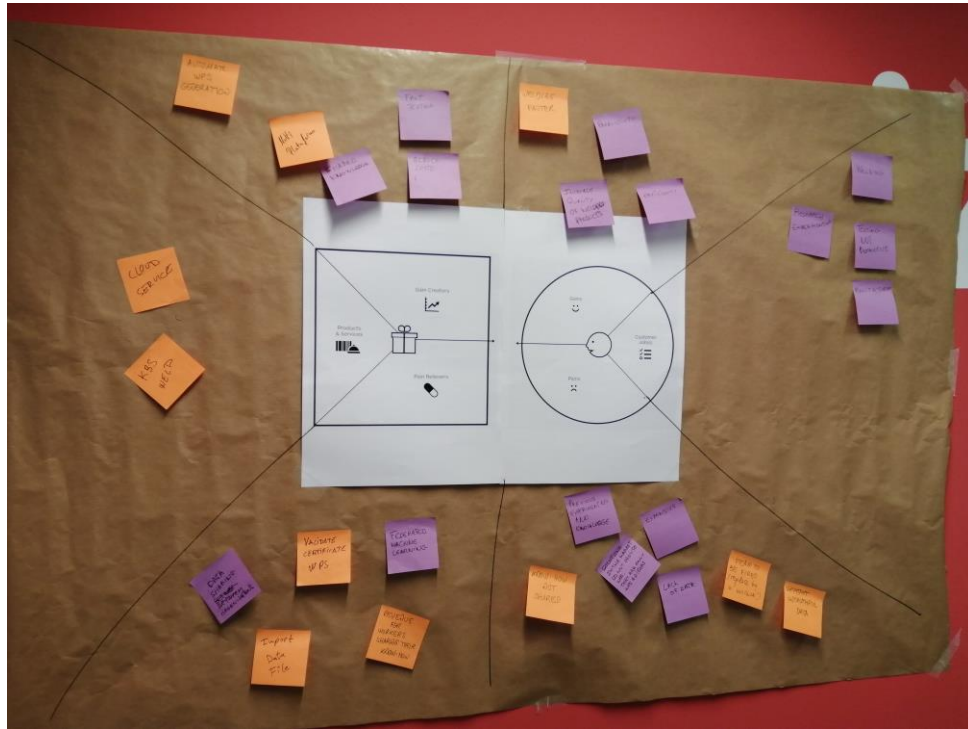


Figure 7: Customer Value Map





TEAM A

CUSTOMER JOBS.	- WELDING - TESTING – NOT DESTRUCTIVE - MANUFACTURING - RESEARCH EXPERIMENTING
GAINS.	- WELDING FASTER - PRODUCTIVITY - INCREASE QUALITY OF WELDING PRODUCTS - EFFICIENCY
PAINS	- KNOW-HOW NOT SHARED - PREVIOUS EXPERIMENTING AND KNOWLEDGE - SOLUTIONS IN THE MARKET DO NOT PROVIDE WPS, THEY ARE ONLY WPS EDITORS - LACK OF DATA - EXPENSIVE - FEAR TO BE FIRED (REPLACED BY A MACHINE) - UNTRUTHFUL DATA
GAIN CREATORS.	- AUTOMATIC WPS GENERATION - MULTIPLATFORM - SHARED KNOWLEDGE - FAST TESTING - REDUCE COSTS
PAIN RELIEVERS	- DATA SHARING BETWEEN ORGANIZATIONS - IMPORT DATA FILE - VALIDATE CERTIFICATE WPS - FEDERATED MACHINE LEARNING - REVENUE FOR WORKERS SHARINT THEIR KNOW-HOW
PRODUCTS AND SERVICES	- CLOUD SERVICE - KBSWELD

TEAM B

CUSTOMER JOBS.	- Combine technology - Welding procedure - Information – material - Protection Material - ISO - Information technology - Information geometrical - PWPS, defects, WPS - Time?, Gases.
GAINS.	- FORUM - FULL KNOWLEDGE - DIGITAL CONDITIONS OF WORK - POWER OF PREDICTION -AI - GLOBAL WELDING DATABASE - SAVE A LOT OF TIME - SIMPLE TO MANAGE
PAINS	- BAD VISIBILITY - LEVEL OF ACCESS - PROTECTION NEEDS - MONEY - LANGUAGE BARRIER
GAIN CREATORS.	- LIFERAY - USER SATISFACTION
PAIN RELIEVERS	- SCREEN OF INTENTION - POTENTIAL LONGER WORK - ROLE BASED CONFIGURATION
PRODUCTS AND SERVICES	- EASY WAY TO PUT INFORMATION - UX - ACCESS TO RULES AND NORMATIVE

