Agile and Reliable Design Decisions based on the Perception of the Target Audience

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I love developing and applying UX methodologies to continually learn about people’s needs together with them. And furthermore, I love making their lives easier, applying my knowledge in the development of new products and services aimed at them, focus on what really matters. I am convinced that including them at the center of the innovation process from the beginning is the right way to generate a positive and significant impact on society. This is the purpose of the IBV area I lead.

I am associate professor of the UX subject of the Master in Clinical Biomechanical Assessment (IBV-UPV).

I am a doctoral student at the UPV. My thesis is about the development and validation of a design optimization methodology based on analysis of people's perception through natural language processing.
“People Driven Innovation”
... to achieve satisfaction of people ☀
It is not an *easy* road ...
The companies fall in love with their ideas.
They rely on their intuition, their tastes, data from the past, imitation...
Most decisions are made in internal group sessions with a high subjective component.
The team is delighted with the solution ★
They use user testing in the final stage of development to confirm their hypotheses.
However, they do not generate the experience they had hoped for.
76% of new launches fail in their first year of life

(Nielsen)
The reality of companies

Not all companies can afford to have the time, the resources and the knowledge to apply user research methodologies.

IBV has more than 40 years of helping companies to develop designs adapted to people’s needs.

waumap is a user-centered design methodological tool that allow companies to make objective and reliable decisions in early phases of the product development process, replacing the most frequent approaches of decision-making based on intuition.

This tool utilizes AI to analyze consumer perceptions of various design alternatives in a standardized, agile, and autonomous manner.
Test your designs in 3 steps

Upload images of your designs and select the questions you want to ask. Establish who you would like to assess your designs and you're all set!

**AB Test: Compare two designs amongst 50 users.**
Discover which they prefer, their opinion and the emotions they generate.

**AB Test Eye Tracking - Compare two designs with gaze analysis amongst 50 users.**
Discover what attracts their attention, which they prefer, their opinion and the emotions they generate.

**Product panel: compare a number of designs.**
Discover what attracts their attention, preferences ranking, their opinion and the emotions they generate.

**Test 'unboxing'.**
Send the product to potential customers, discover its use and possible improvements. First impressions? Does it have the WAI effect?

All of the tests you create are saved for your reference.
1: Set up the test

The company uploads its proposals and configures the test, choosing the questions that wants to ask from a battery of questions and introducing images of the design proposals that wants to analyse. They can share the test with their own clients or launch it to a panel of testers previously profiled by the company (age, gender, purchasing power, nationality and so on).
A-B Test: Comparing two designs

Discover which design they prefer, what emotions they generate and why.

**STEPS**

1. Designs
2. Survey
3. Confirmation
4. Send test

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**Title of test**

Write the type of design to be assessed in no more than five words.

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**Designs**

**CONTENT**

You can upload image files (png, jpg, jpeg) with suitable dimensions (minimum 500x500 pixels). Both images must be comparable (e.g. same range or category) and their proportions must be similar (do not choose a horizontal image and a vertical image).

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Upload content
A-B Test: Comparing two designs

Discover which design they prefer, what emotions they generate and why.

**Restaurant commercial**

**Survey**

**QUESTIONS**

You can choose from the 4 suggested questions or select others from the list below 'additional questions'.

1. Overall, how much do you like it?

2. How original do you find it?

3. To what extent do you think it meets your needs?

4. Based on the information we have shown you, how likely are you to buy it?
A-B Test: Comparing two designs

Discover which design they prefer, what emotions they generate and why.

STEPS

Restaurant commercial

Preview of your test

TEST SECTIONS

These are the sections the user will navigate through when completing the test

TO BE ASSESSED

A  B
A-B Test: Comparing two designs

Discover which design they prefer, what emotions they generate and why.

**STEPS**

1. Designs
2. Survey
3. Confirmation
4. Send test

**Restaurant commercial**

**Send test**

**USERS**

Choose how you wish to send the test to the users.

- I will send the test to the users myself.
- I want Waumap to send the test to a user panel.

**CHARACTERISTICS**

Choose from amongst the available categories to form your survey audience.
2: Potential users perform the online test

Potential users access the online test that has been created and their perception is recorded when viewing different designs that the company has introduced. They will have their webcam connected so that waumap can obtain their visual strategy and thus identify the points they notice most in the images shown, and their microphone to express their opinion in a natural way.
Comparison of Product test

Instructions for calibration

You are now going to calibrate your camera and we want to help you to get in the right position. Try to align your face with the on-screen silhouette. Once it is aligned, click 'Next' to continue.

Please note: to ensure that both the calibration and stimulus viewing work properly, you should remain in this position as much as possible.
Comparison of Pasta dish aesthetics

Pasta dish aesthetics A

Please follow the instructions below your recording to access the calibration and image viewing. To ensure that your gaze is recorded properly, follow the guidelines during the visual scan:

1. Firstly, a logo will move around the screen. You should follow it with your gaze.

2. You will then see an image and will be given 15 seconds to look at it.

3. The logo will then appear again and you will have to again follow it with your gaze.

Press F11 to view it in full screen; then press 'Next'.

Instructions | Correct position.
Comparison of Pasta dish aesthetics

**Pasta dish aesthetics A**

**FIRST OPINION**
Freely express your first impressions of the design.

**YOUR VOICE FEEDBACK**
Press the microphone button to start recording. Record each sentence as a single audio of no more than 7 seconds. You can record as many audio files as you like. USE SHORT, SIMPLE SENTENCES.
3: See results in less than a week

Within a few days and automatically, the company will be able to see how users have interacted with the design proposals shown.

It will obtain information on the perception of the stimuli shown, the points on which potential customers focus the most, feelings generated and texts with their opinion, reasons for preference/rejection, etc.
How is information extracted and analyzed?

Areas of attention

Gaze tracking is obtained using non-invasive Eye Tracking technology, via webcam.

Data analysis carried out with IBV’s own programming using OpenCV Models to obtain areas of greatest visual attention.

Sentiments

Information is obtained by recording open opinions collected in different formats: text or audio.

Automated analysis of the freely expressed information carried out in two phases using:
1. Audio transcription algorithms (Amazon Transcribe) and natural language processing algorithms -PNL- (Amazon Comprehend).
2. Opinion polarity algorithms (Amazon Comprehend).

Key values

The information is obtained by means of a closed survey with 4 questions selected by company together with a final question prioritising the stimulus selected as favourite.

Survey results treated quantitatively to show the total percentage of participants with responses classified as positive grouped in Top 2 Box value (sum of the 2 most positive values of the 5 possible response options of each indicator valued by stimulus).

In addition, the percentage of participants selecting and discarding each stimulus as a favourite is included.

Reasons for selection

Information is obtained by recording open opinions collected in different formats: text or audio.

Automated analysis of the freely expressed information using audio transcription algorithms (Amazon Transcribe) and natural language processing algorithms (Amazon Comprehend).

Data visualisation using IBV’s own programming to generate word clouds based on the frequency of mentions.
A-B Test: pasta dish aesthetics

First impressions? How do they assess each stimulus?

75 users
- 55% women
- 45% men
- Usual users + usual clients of Italian restaurants
- Living in Valencia

Areas of attention

Stimulus A

Emotions
- Mixed: 7.4%
- Positive: 59.3%
- Negative: 8.3%
- Neutral: 25%

Key factors
- Likes: 71%
- Willing to buy: 67%
- Covers needs: 55%
- Appealing product: 70%
- Chooses as favorite: 75%
- Discards as favorite: 25%

Reasons for choice and discard
- Reasons for being favorite
- Reasons for being discarded

Stimulus B

Emotions
- Mixed: 7.4%
- Positive: 50.3%
- Negative: 16.8%
- Neutral: 25.5%

Key factors
- Likes: 50%
- Willing to buy: 32%
- Covers needs: 50%
- Appealing product: 15%
- Chooses as favorite: 25%
- Discards as favorite: 75%
Use Cases of waumap

- Food and Personal Hygiene
  - Chovi
  - Costa Brava

- Furniture and Ceramics
  - Royo
  - Actiu

- Clothing and Footwear
  - Iuanvi
  - Esmalglass-Itaca

- Audiovisual
  - PlayFilm

- Tourism
  - SPB
  - Peronda
  - Pikolinos
  - Hosbec
## Results of the waumap use cases

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Experiment results</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Waumap results are useful for its decision making</td>
<td>True. &gt; 60% affirmed that waumap results are credible and clear for its decision making.</td>
</tr>
<tr>
<td>Waumap tests help the company in its decision-making processes</td>
<td>True. &gt; 60% named design problems of their company to test with waumap.</td>
</tr>
<tr>
<td>Companies have adequate material to evaluate different designs</td>
<td>True. &gt;60% provided stimuli of a design problem relevant to their company</td>
</tr>
<tr>
<td>Waumap fits into the company's daily tasks</td>
<td>True. &gt; 60% completed the configuration process of a Waumap test and valued its ease of use.</td>
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A sample of 75 users is enough to detect substantial differentials *exceeding 30% in preference* among design alternatives.
What is the user experience with waumap?

All users (270) would participate again in future online tests using the waumap tool.

72% selected to express free opinion with TEXT

28% selected to express free opinion with AUDIO

Users had a satisfactory experience with waumap (>8.5 out of 10).

"A cool experience. The platform is intuitive and easy to use. Completing the test was really easy, simple and quick, and it was short too." Maria

"It was more convenient and quicker than your regular survey.“ Isabel
The perception results of a sauce packaging, assessed in two different Waumap tests with different samples of users and in different time periods were compared.

First impressions expressed naturally extracted by natural language processing algorithms were similar: polarity of the sentiments and word clouds.
A comparative analysis of the results obtained through a **Waumap test** and through a classic market research study (two **focus groups**) was carried out.

The results obtained with both tests were identical, obtaining the **same design as a favorite** and the **same reasons** for choice and discard.
### Advantages of **Waumap**

<table>
<thead>
<tr>
<th>Waumap Test</th>
<th>2 focus groups</th>
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</thead>
<tbody>
<tr>
<td>N=75 users</td>
<td>N=14 users</td>
</tr>
<tr>
<td>Reporting deadline: 3 days</td>
<td>Reporting deadline: 3 weeks</td>
</tr>
<tr>
<td>Staff hours: 2,5 hours</td>
<td>Staff hours: 45 hours</td>
</tr>
<tr>
<td>User gratification cost: 225 euros</td>
<td>User gratification cost: 420 euros</td>
</tr>
</tbody>
</table>

The Waumap results are obtained in a much more agile, simple and economical way.
1. It *focuses efforts on satisfying customers*, seeking to maximize their emotional perception of a given solution, knowing the reasons for this perception.

2. It *optimizes the decision-making process* when designing new products and services, as it allows robust tests to be carried out with a significant sample of potential customers from all over the world in *just a few days*, thanks to Artificial Intelligence.

3. It *reduces the costs* involved in having the voice of potential customers with classical methodologies, thanks to the digitalization of People Driven Innovation methodologies.
Future work

- Including *more than two design alternatives* in the Waumap test.
- Exploring sentiment analysis by also analyzing *tone of voice*.
- Obtaining and validating a *preference prediction model* based on sentiment polarity, when more data is obtained with future use cases.
FOCUS

On what matters

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https://waumap.ibv.org