# Communicate more reliably

The future of cognitive feature research in digital signage

# About WarpStyle

NewTypo.cog

# What is WarpStyle?

○ WarpStyle:
The brand name for the new business that Fuji Printing Co., Ltd. started last year with the concept "Communicate more reliably."

○ Fuji Printing:
Over 50 years of achievements in printing, planning and producing manuals for consumer electronics.

○ Handling manuals with the mission of quickly and correctly communicating the usage method of the product to the customer, Fuji Printing pursues "legibility" and "comprehensibility" on a daily basis.

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# The WarpStyle service

○ "WarpStyle" is a brand started in order to develop new fields from these achievements in manual production.
This service is made up of the following 4 points…

NewTypo.cog
新タイポグラフィ認知デザイン研究所

  ○ NewTypo.cog, which objectively evaluates design using cognitive science

  ○ CreNative, which localizes design using design companies throughout the world

  ○ AR&Life, which aims for the fusion of the real and the digital using augmented reality

  ○ Sandy, which pursues new possibilities in design using 3DCG

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WarpStyle powered by Fuji Printing Co., Ltd.

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# What is NewTypo.cog?

○ New Typography Cognitive which is one of the services of WarpStyle, has been advancing projects in collaboration with researchers at ATR for the past three years.

○ The primary subject of research has been the influence of the size and layout of characters and line spacing etc. on the cognitive features of humans.

○ Initiatives to discover objective indices for the world of design, which tends to be interpreted subjectively, have received the acclaim in many scientific society.

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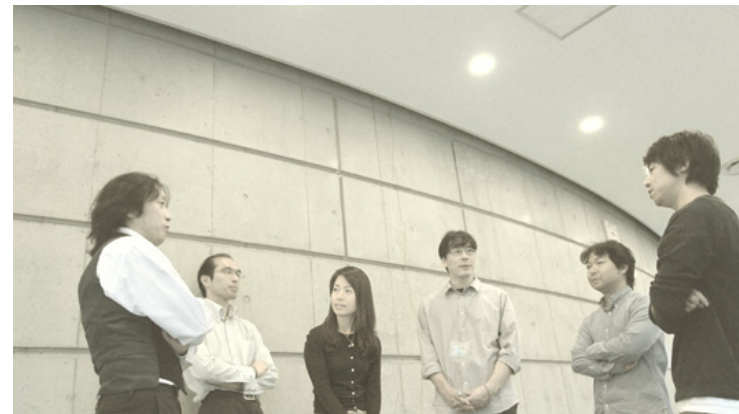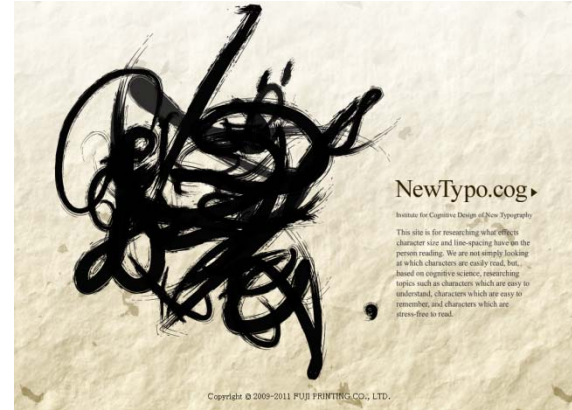
# NewTypo.cog

# Results announced for NewTypo.cog (2010)

| | |
|---|---|
| November 6, 2009 | ATR Open House |
| March 2 | KEER2010 International Conference on Kansei Engineering and Emotion Research 2010 |
| July 3 | The 57th Annual Conference of JSSD |
| August 18 | ICCS2010 The 7th International Conference on Cognitive Science |
| August 24 | TC Symposium 2010 |
| October 8 | |
| September 17 | The 27th Annual Meeting of the Japanese Cognitive Science Society |
| November 2 | IAUD The 3rd International Conference for Universal Design |

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# Results announced for NewTypo.cog (2011)

| | |
|---|---|
| January 21 | IPSJ, 141st Human-Computer Interaction Workshop |
| June 26 | The 58th Annual Conference of JSSD |
| September 23 | The 28th Annual Meeting of the Japanese Cognitive Science Society |
| November 11 | ATR Open House |
| November 29 | iUSEr2011 2nd International Conference on User Science and Engineering |

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# Research to date

○ For the past three years, we have pursued comprehensibility and legibility, primarily specializing in character layout.

○ First, the effect typesetting in paper media has on humans were researched, and it was found that there is a visible difference in the characters that people feel are easy to read, and those that are actually memorable.

○ Recently, there has been a shift to cognitive feature research using digital devices, and the subject of research has become cognitive features in differences in character calibration results between paper and PDF formats and in smart phone operations (skipping, scrolling).



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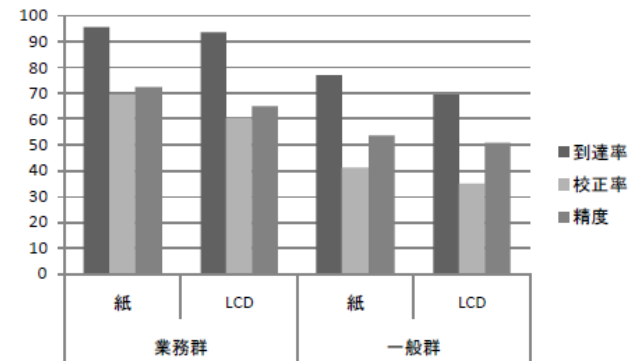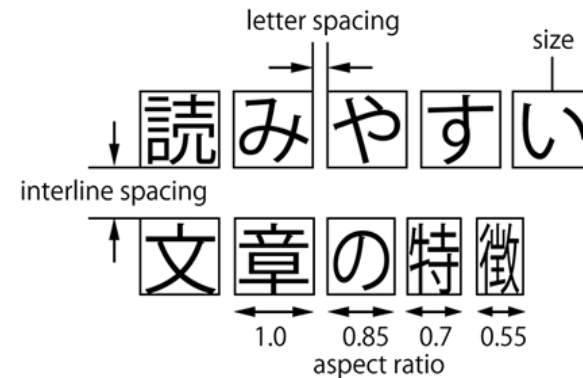
**NewTypo.cog**

# Research from now on

○ NewTypo.cog plans to adopt cognitive features in the digital signage that is also attracting attention from the printing industry as a new venue in which to apply accumulated know-how.

○ It can be said that the cognitive features of digital signage, in which the time axis (activity, transitivity) can be effectively used, have the potential to elicit different responses compared to paper media, in which there is the limit of page space to the affect on cost.
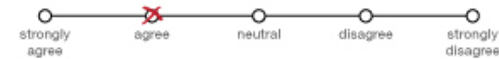
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# Preliminary research

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# Preliminary experiments

○ We wish to contribute to the digital signage industry through continuing varied research based on already-published preliminary experiments in cognitive features relating to digital signage,

○ such as the digitization of the signage effect using a path analysis that employed Lickert's Scales and latent variables, and discrimination survey results regarding signage apparatus.

Example Likert Scale

1. Wikipedia has a user friendly interface.

○ strongly agree  ✗ agree  ○ neutral  ○ disagree  ○ strongly disagree

2. Wikipedia is usually my first resource for research.

✗ strongly agree  ○ agree  ○ neutral  ○ disagree  ○ strongly disagree

3. Wikipedia pages generally have good images.

○ strongly agree  ○ agree  ○ neutral  ✗ disagree  ○ strongly disagree

4. Wikipedia allows users to upload pictures easily.

✗ strongly agree  ○ agree  ○ neutral  ○ disagree  ○ strongly disagree

5. Wikipedia has a pleasing color scheme.

○ strongly agree  ○ agree  ✗ neutral  ○ disagree  ○ strongly disagree

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# Preliminary experiment ①
# The social psychology of persuasion in ads

○ Charles Dennis et al. 2010

○ The persuasion that an advertisement exerts when people see it and acquire sufficient information.

○ The ELM (elaboration likelihood model) is the result of having performed social psychological analysis on this phenomenon of "persuasion" from a "direct route" and a "peripheral route."

○ Individuals follow a direct route when their information-processing ability and motivation are high, and a peripheral route when they are low.

○ Advertisements deployed on digital signage bring the results of both the "direct route" and "peripheral route."

○ Direct route

Cognition ➡ Emotion

○ Peripheral route

Emotion ➡ Cognition

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# Preliminary experiment ①
# Limited capacity of digital signage

○ In order to induce results for both the direct route and peripheral route, it is necessary to give movement to an advertisement.

○ However, with regards to digital signage, there is a limit to the processing ability in the brain for conditions other than place, time, and size etc. This is the Limited Capacity Model.

○ Since this concept can also be applied to the operating procedures of apparatuses in manuals, it may be possible to apply previous know-how.

○ Taking into account these conditions, we are considering the cognitive verification of content or effects unique to digital signage.

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## Consideration:
## Triggers unique to digital signage

○ From the perspective of this limited capacity, digital signage has many points that should be considered in the playback time and information content of the display.

○ In special environments such as in commuter trains, content with plot can be conveyed, and the limited capacity can be considered to be enlarged. However, it is necessary to consider techniques that did not exist up until now in the case commuting etc is hypothesized.





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## Consideration:
## Triggers unique to digital signage

○ Whilst not being a poster nor a TV commercial, we believe it is necessary to create content after having firmly grasped the special qualities of still image and movies.

○ Necessary to reliably convey everything we wish in a short time. In addition, we hypothesize that infographics might hold an important key.

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## Consideration:
## Usefulness of infographics

○ In general, infographics are displayed in still images, but movement and sound can be added with digital signage.

○ This can be thought to remarkably increase the information transferability that infographics possesses.

○ Based on this hypothesis, in future we would like to carry out research on the cognitive features that the digital signage and the content displayed on it give to people.

| Media | Usable contents |
|---|---|
| Poster | Infographics only |
| Digital Signage | Infographics<br><br>+ Movement<br>+ Sound |
| TV Commercial | Infographics<br><br>+ Movement<br>+ Sound<br>+ Story |

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# Preliminary experiment ②
# Screen design evaluation of digital signage

○ Junichi Endo et al. 2009

○ Evaluation of the design most suited to the display of facility information in a public space

○ Evaluation factors:

  ○ Pictogram, photograph, or text

  ○ Black and white, or color

○ The result of experiments by paired comparison was that pictograms in color were well-received.

○ Photographs have strong appeal, but the essential information to be conveyed is hard to recognize.

○ As noted in Preliminary experiment ①, we would like to carry out an experiment with moving content.

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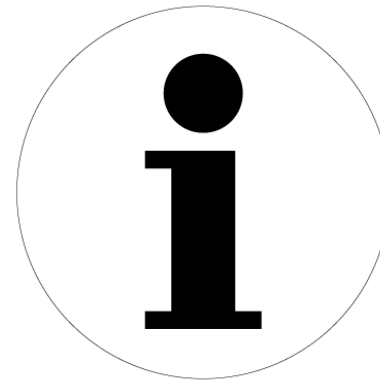
## Preliminary experiment ③
## Consideration of the structure and impression evaluations of poster advertisements

- Satoshi Nishijima et al. 2005

- Classification of the copy text and images of posters by function.

  - Copy text is classified into appeal-type, subject information-type, and word play-type.

  - Images are classified into directly-related representations that present all or part of the subject of the advertisement, and indirect representations that are shown metaphorically or decoratively. Characters etc are classified as directly related representations that aim to give shape to indirect subjects.

- "Kansei evaluation" by SD method of posters classified according to the above.

- As a result of factor analysis based on this data, tendencies such as a positive correlation between impact and valuation were seen.

- Treating this experiment in paper posters as a preliminary example, we would like to perform evaluations with digital signage.

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# Preliminary experiment ④
# Legibility evaluation of electronic paper signage

○ Shihomi Takahashi et al. 2010

○ The legibility of characters displayed on large-scale electronic paper was investigated.

○ Legibility was highest when the line spacing was set to 50% – 75% of the character height and the character spacing to under 25% of the character width.

○ It was established that the optimum reading speed is 8 - 9 characters per second.

○ The above results are identical for paper and liquid-crystal displays.



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# Preliminary experiment ④
# Legibility evaluation of electronic paper signage

○ Legibility was investigated comparing paper and an liquid-crystal display in a visual search experiment.

○ Multiple similar kanji containing the "fish" or "woman" radical were displayed concurrently as a presentation stimulus (from 4 to 28 characters).

○ When subjects searched for the target kanji, the percentage of correct answers was significantly higher for electronic paper than for paper.

○ We would like to perform such a visual search experiment with moving content.

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| Radical | Target | Interference stimulus |
|---|---|---|
| 魚 | 鱗鯵鰹鱈鯑鯰 | 鮭鮫鰤鯱鰻鰈鱚鮨鮪鮮鰐鰭鯨鰯鯛鰍 |
| 女 | 姑姥嫌婦婿妹 | 如媒嫡姶妨姪嫁好始妃妓嬢奴娩姉妖 |

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# Conclusion

○ Based on the results of cognitive science experiments with paper media and mobile devices and preliminary experiments, we would like to establish indices with an awareness of information on digital signage

○ Experiments in a realistic environment hypothesizing commuting etc.

○ Infographics are an important key

○ We hypothesize the information with movement unique to digital signage to be effective

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# Collection of infographics by overseas designers

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# Global perspective

○ A global perspective is essential in adopting infographics

○ We believe it important to make it possible to quickly and reliably communicate information to people of any nationality, not just the Japanese.

○ We have links with 56 design companies in 32 countries, and can easily gather content and acquire information from designers throughout the world.



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# World infographics

○ Accordingly, we had 11 designers send us samples of their infographics for this presentation.

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The infographics were designed with this phrase as the theme.

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# Dsense Design (Malaysia)

# Helga-design Co (Ukraine)



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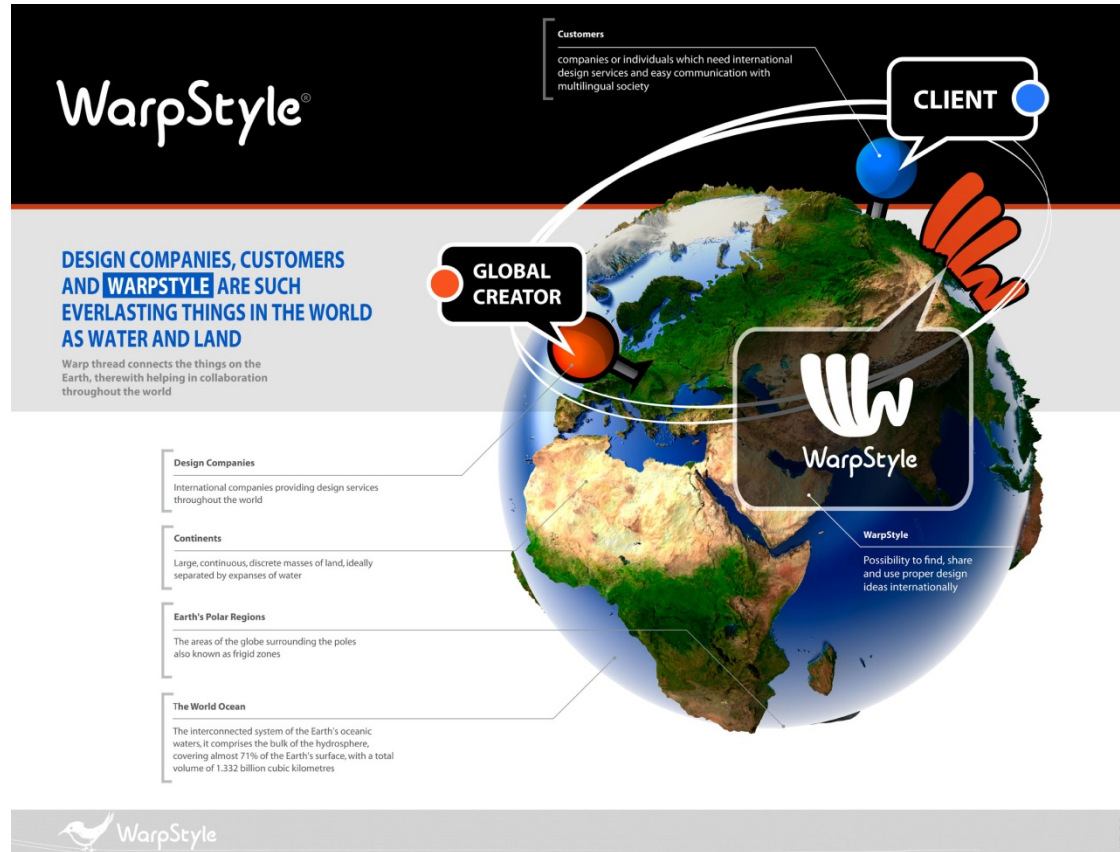
# Helga-design Co (Ukraine)

**CreNative**

# RT Design Studio (Moldova)
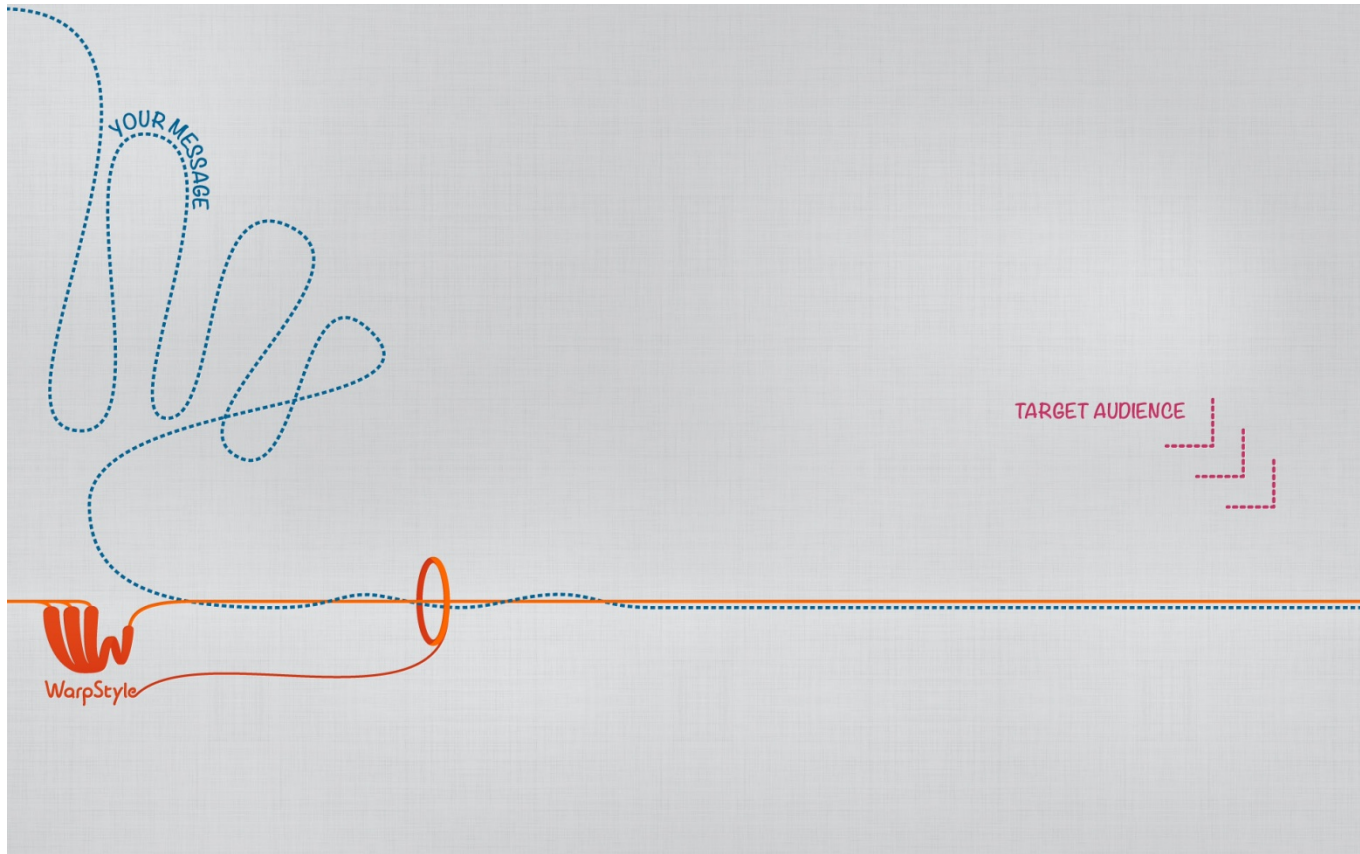
# Lucas Design (Rumania)

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# Andrzej-Ludwik Wloszczynski (Poland)



warp thread
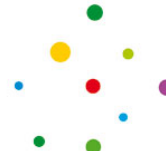
free informations

combines information
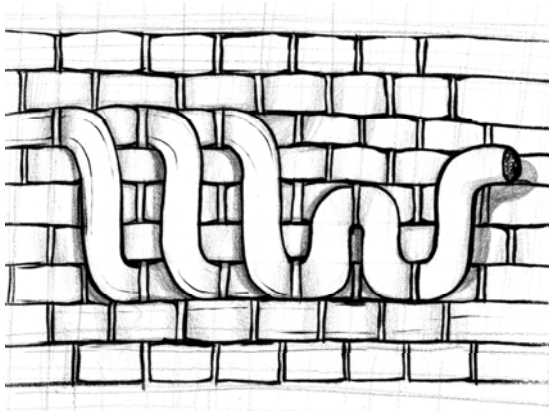thread

convey information
meet the information
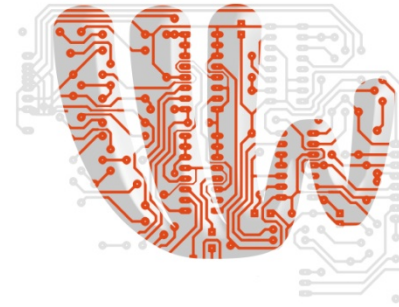1 point

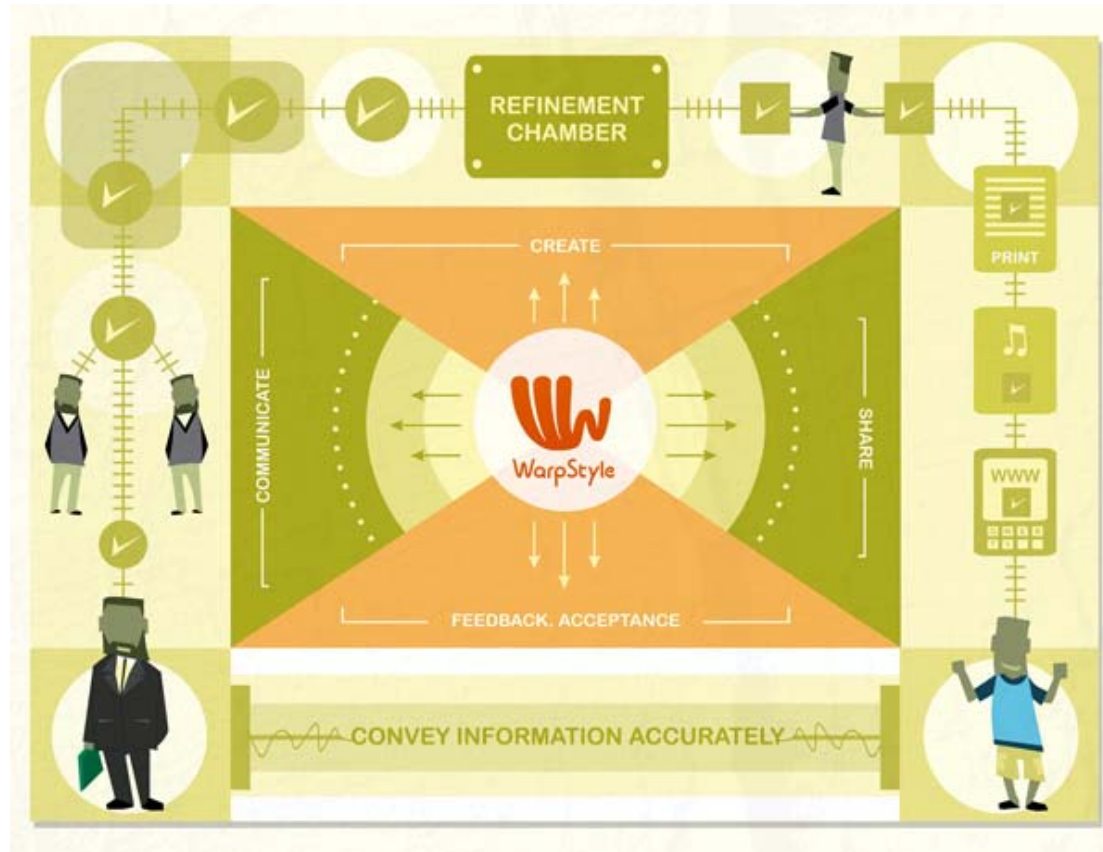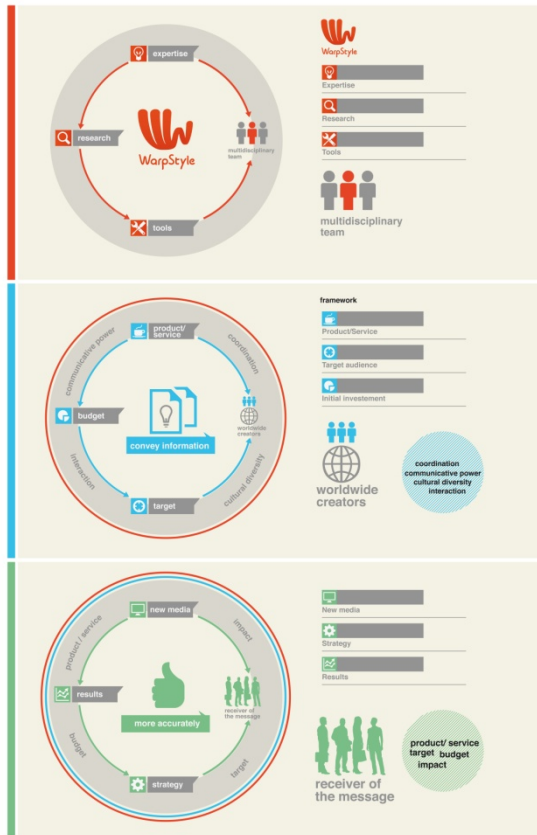more accurately
precision

goal > Warp

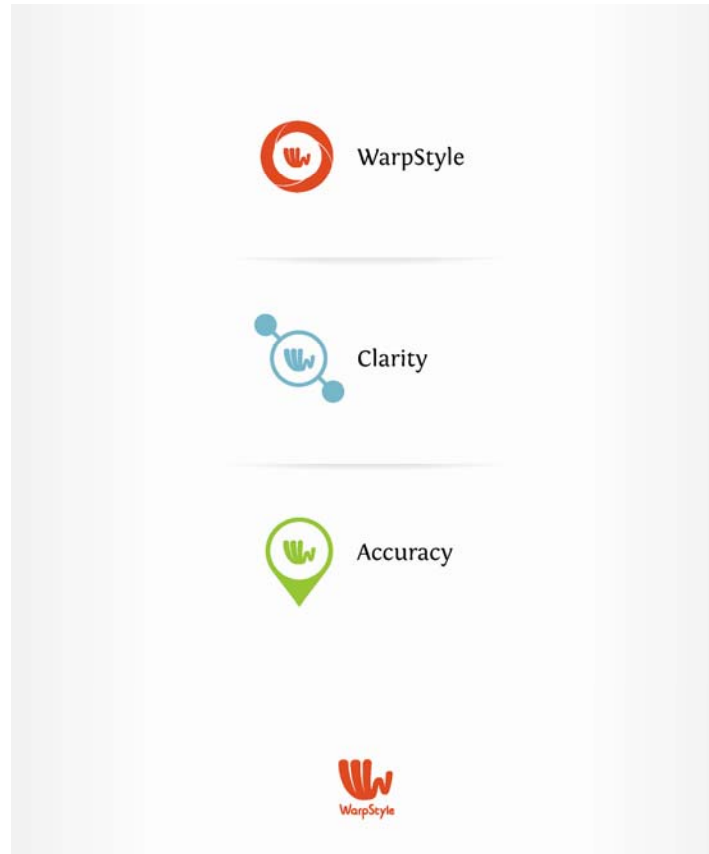31

# Goho Estudio (Spain)

# Oscar Gimenez Illustration (Spain)

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# The SeekProject (Nigeria)



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Karo Akpokiere www.seekproject.com

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# MonoStudio (Argentina)

# Streamline Creative Ltd. (New Zealand)

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○ Moving forwards, we will build various hypotheses and digitize the effects of digital signage.

○ We hope to hear from people with whom to carry out such research, and people with an interest in the digitization of effects and the predominance of content etc.

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○ We will operate with **"WarpStyle, communicate more reliably"** as our concept.

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○ Thank you for listening.