
S-100 Portrayal Harmonization Project

A Conceptual Study on ENC Colours & Symbols

Presented by KHOA

“ A Study on the Development of ENC Colors and Symbols for S-101

As a basic research project in 2018, a draft form of **symbol design application guide and production process** were developed. Since then, we have continued to study symbol design and establish a guide for colours and symbols, and try to find out some challenges in terms of display issues.

- SVG creation using KHOA SVG Generator – Applied to ENCs to monitor and identify issues
- Case study on 10 point symbols such as buoys and wrecks

“ Development of design application guides and draft production processes

Symbol Design Guide



Symbol Production Process

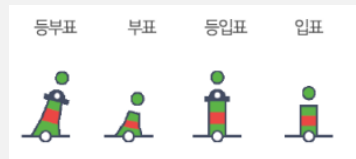


“ 10 Representative Point Symbols Design

Before



Design similar to the existing symbols Easy portrayal design for ENCs A simplification plan



In twilight & night mode



Symbol color and lines & colors

Day (b) Mode	Dusk (황혼) Mode	Night (밤) Mode
● #5cb547 R: 92/G: 181/B: 71	● #93c366 R: 147/G: 201/B: 86	● #93c955 R: 147/G: 201/B: 85
● #5cb547 R: 92/G: 181/B: 71	● #f37365 R: 243/G: 115/B: 101	● #f37365 R: 243/G: 115/B: 101
● #5cb547 R: 92/G: 181/B: 71	● #e4ebf7 R: 228/G: 235/B: 247	● #c4cee8 R: 196/G: 206/B: 232
● #5cb547 R: 92/G: 181/B: 71	● #f7d95c R: 247/G: 217/B: 92	● #f7d95c R: 247/G: 217/B: 92
● #5cb547 R: 92/G: 181/B: 71	● #ec5888 R: 236/G: 91/B: 136	● #ec5888 R: 236/G: 91/B: 136

0.6 pt	0.6 pt	0.6 pt
Day (b) Mode ● #414a61 R: 65/G: 74/B: 97	Dusk (황혼) Mode ● #e4ebf7 R: 228/G: 235/B: 247	Night (밤) Mode ● #c0d1eb R: 199/G: 210/B: 235

0.5 pt	0.5 pt	0.5 pt
Day (b) Mode ● #ed1272 R: 237/G: 22/B: 114	Dusk (황혼) Mode ● #ec5888 R: 190/G: 38/B: 72	Night (밤) Mode ● #ec5888 R: 190/G: 38/B: 72

- Developed a guide for colors and lines thickness, taking into account the visibility and attention of symbols in accordance with the environment of day (low), twilight (yellow) and night (night) mode provided in ENCs.

“ 10 Representative Point Symbols Design

As a pilot project in 2018, 10 representative symbol symbols were produced in two styles – simplified plans for small-scale, and electronic products in three different styles (day, night and twilight mode).

전자해도 심볼 시안 수정디자인 - 개선안 (종이 해도나 기존 전자해도 유저들의 혼란을 피하기 위해 기본심볼과 최대한 유사하게 제작)

상징	기본 심볼	Day(낮) Mode	Dusk(황혼) Mode	Night(밤) Mode	Simplified
등화, 등대 이해의 용이성을 높이기 위해 색상을 통일하여 붉은색과 흰색을 사용하며, 등화나 등대 기둥은 생략함					
좌회전표지 1. 좌회전 표지 기둥 생략하여 생략함 2. 좌회전 표지에 기둥이 생략됨 3. 좌회전 표지 색깔은, 좌, 우, 좌회전 표지 색깔					
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우회전 항로 우선 우회전 항로 우선 표시가 없음					
방위표지 (등) 1. 방위 표지 기둥이 생략됨 2. 방위 표지 색깔은, 좌, 우, 방위 표지 색깔 3. 방위 표지 색깔은, 좌, 우, 방위 표지 색깔					
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전자해도 심볼 시안 수정디자인 - 개선안 (대형지도 상계정보의 내용을 파악할 수 있도록 최첨단 직관적인 표현)

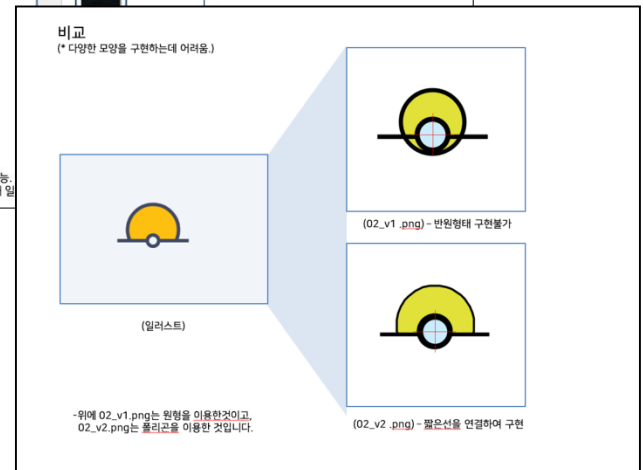
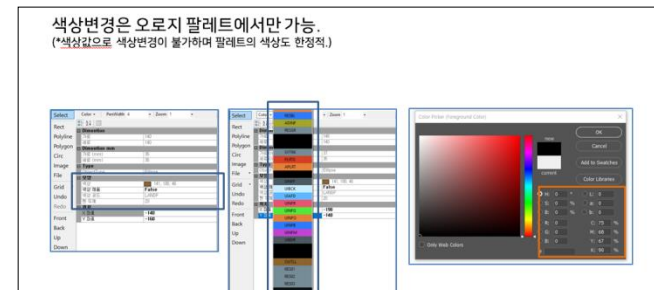
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“ Creation and Testing of Symbol SVG

Made two types of 10 symbols

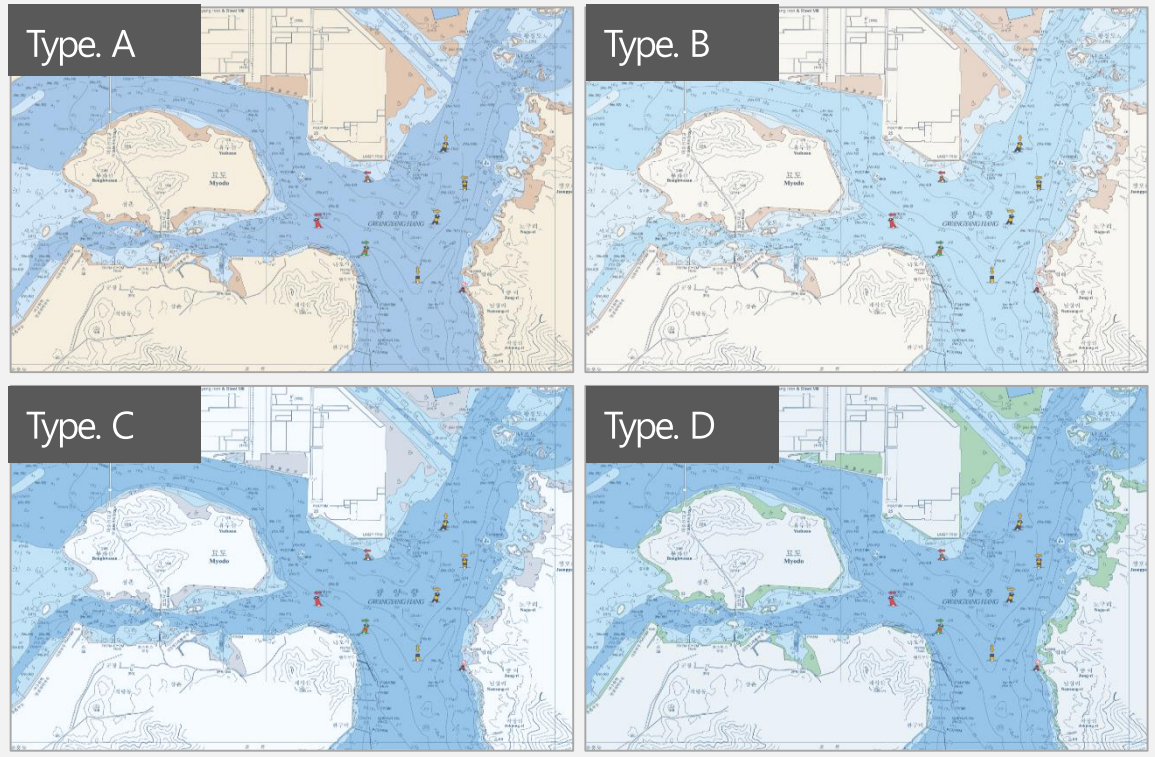
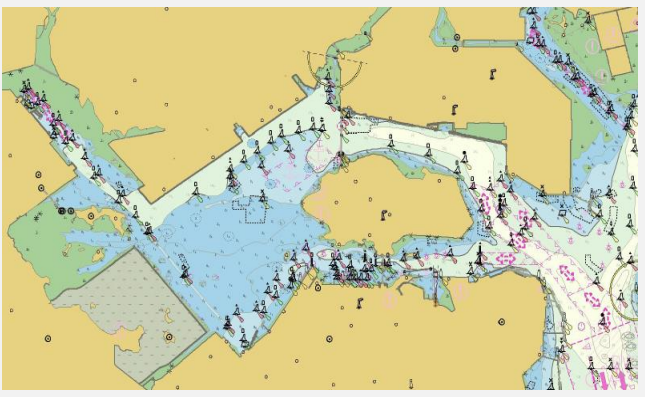


Preparation of problems and improvement plans for SVG production tool portrayal limits



“ Basic Base Map Portrayal Study

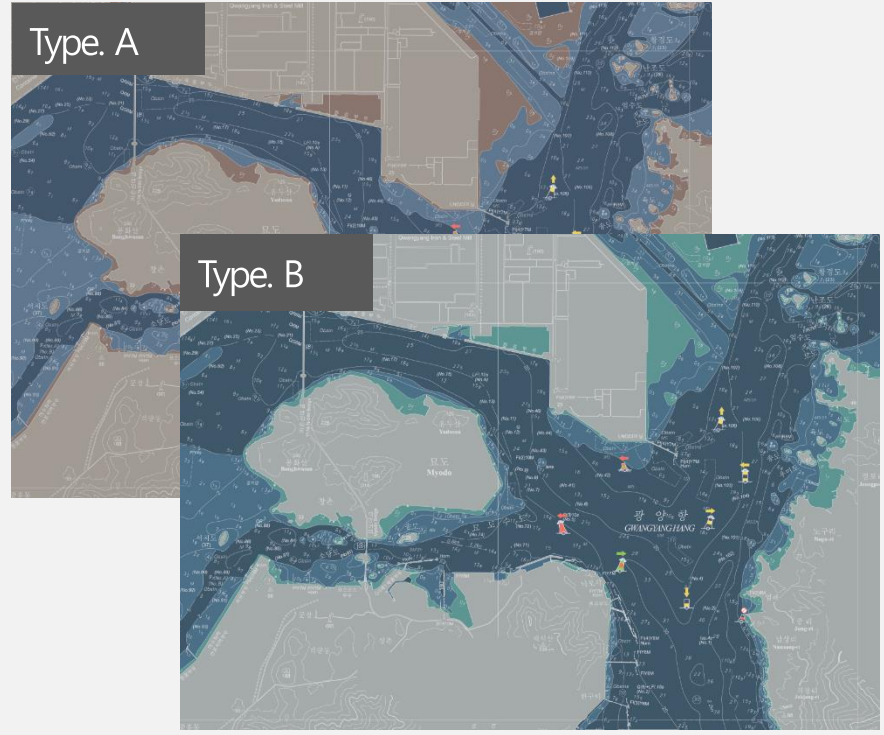
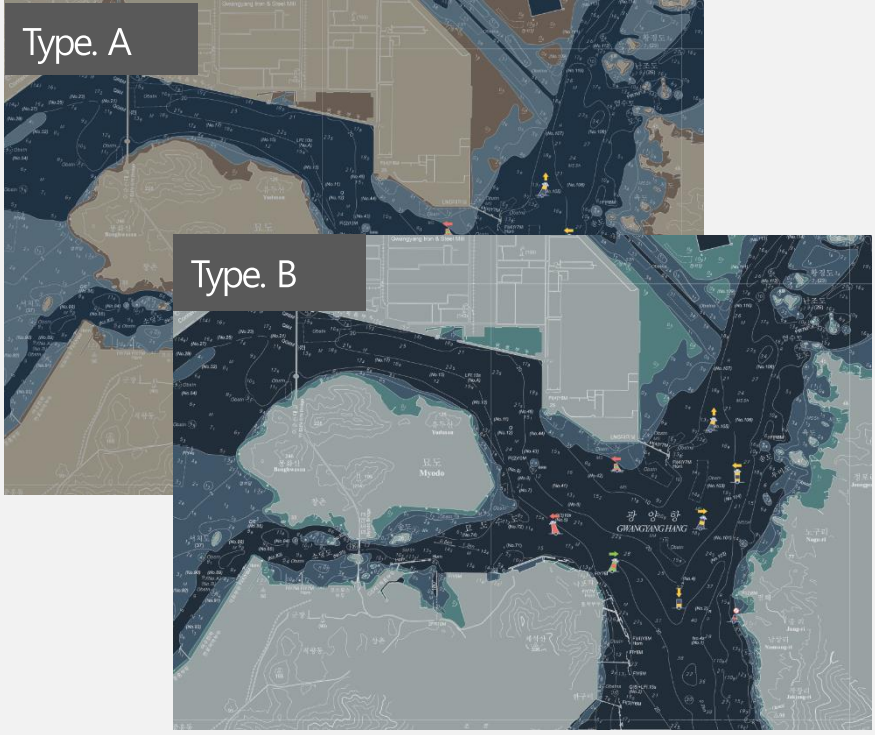
Daytime Mode



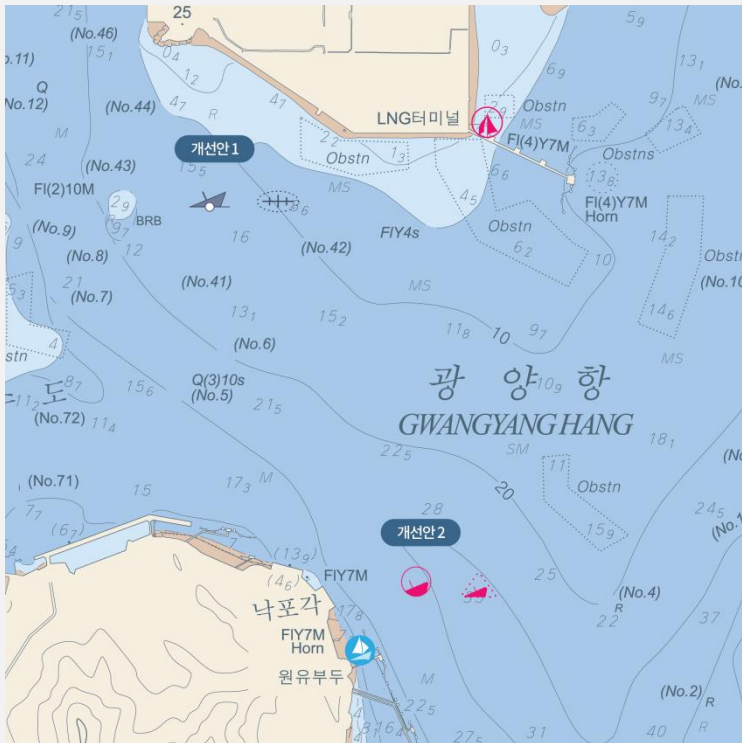
“ Basic Base Map Portrayal Study

Night Mode

Twilight Mode



“ Point Symbol Style Study



- Various visual presentations such as exterior shapes and line styles, as well as solid and line styles
- Symbols need to be categorized – define the characteristics of each symbol, such as safety, direction, location and facilities, and establish appropriate color policies
- Overall, existing colors and shapes need to be discussed after establishing a new color guide.

Wreck



Existing Symbol



The form is inherited, but visually supplemented.



A conceptual study on the improvement of readability and intuitive meaning transfer.

Marina, Boat Harbor



Existing Symbol



The form is inherited, but visually supplemented.

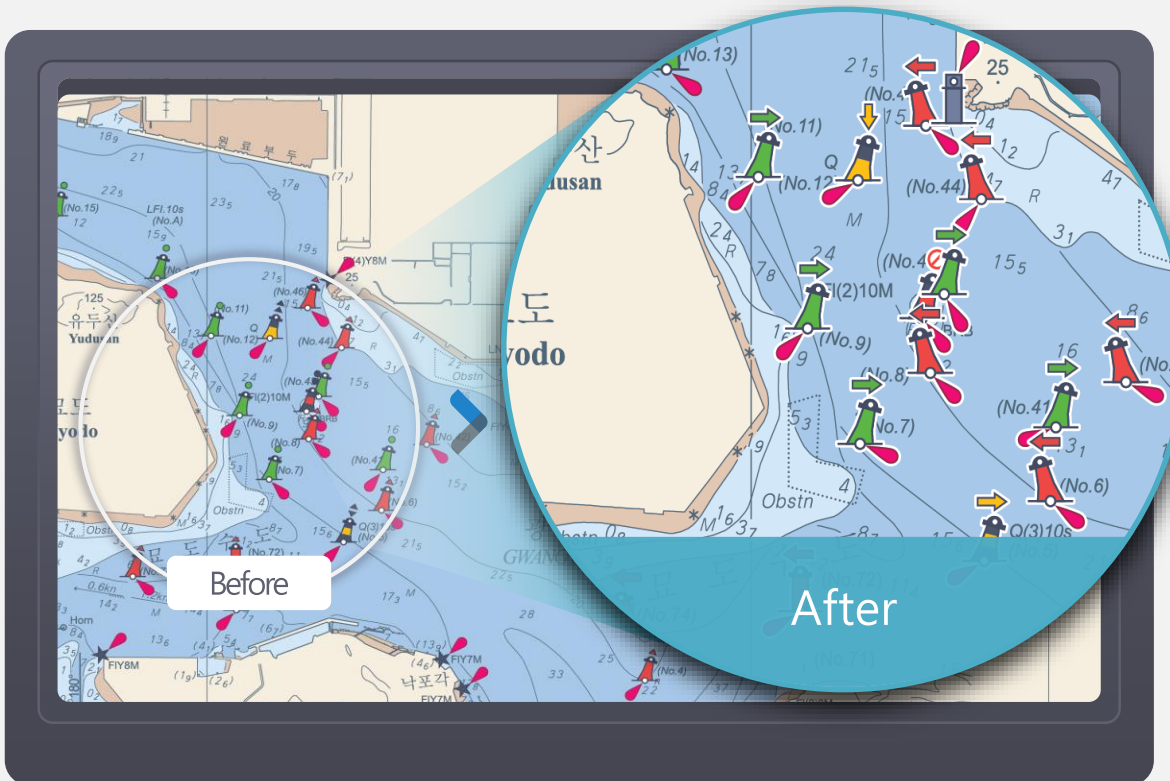


A conceptual study on the improvement of readability and intuitive meaning transfer.

Application of comfortable color in leisure symbolism.

“ Study on Regulation of Portraying Overlapping Symbols

A Study on Overlapping Symbol Portrayal



Improvement goal

- If existing symbols are overlapped on an ENC, add white lines to the rim of the symbol to increase legibility and clarity



legibility

+



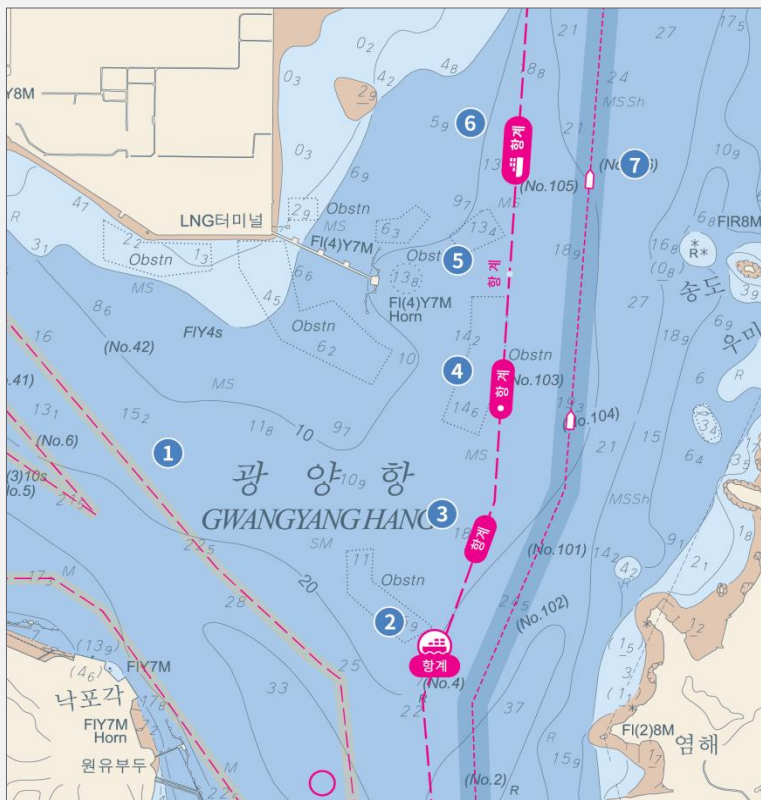
clarity

Color & Stroke

- RGB 100%, 100%, 100%
- 0.75pt

“ Line Symbol Basic Guide Study

Area/line style



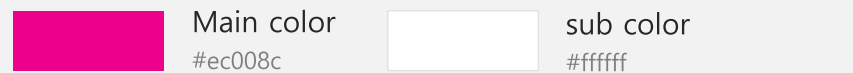
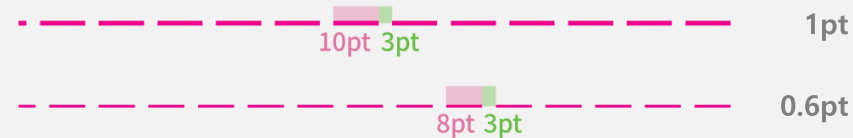
Harbor limit



Ferry route



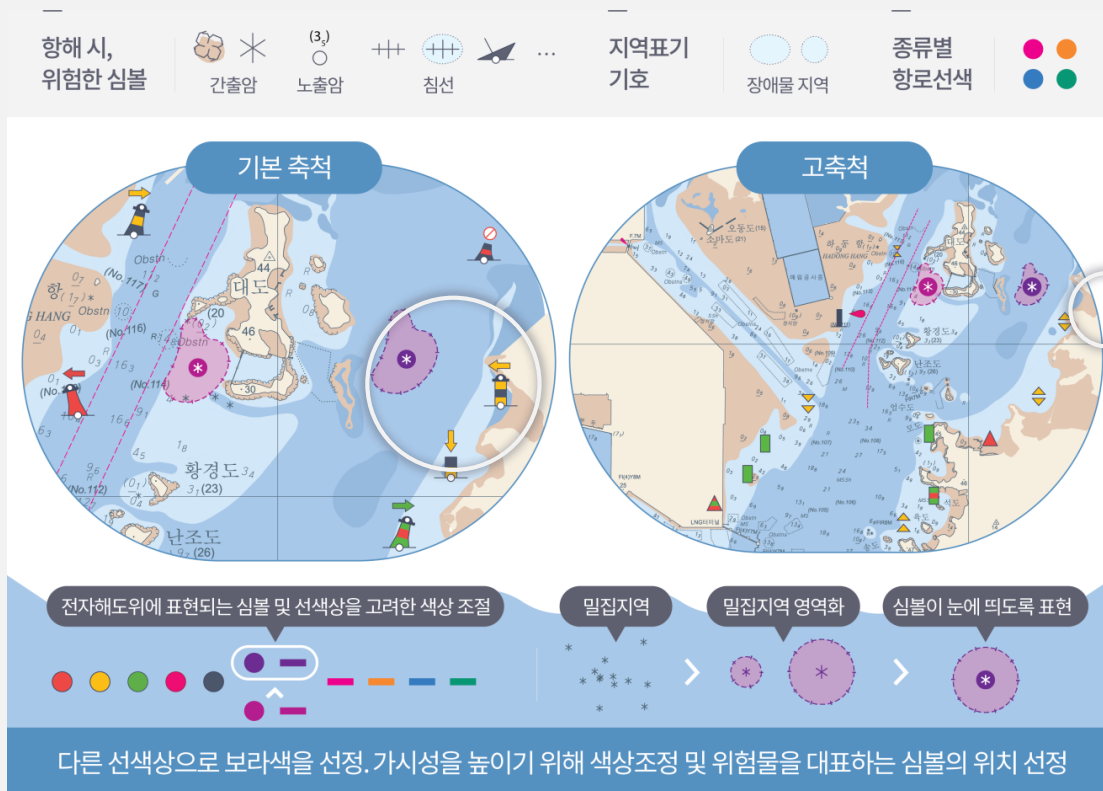
Line style



- Currently, existing color policies are maintained and forms & styles are being tested.
- When color policy is finalized in the future, various attempts are being prepared to take into account visibility.
- We're also studying portrayals that combine lines and polygons.

“ Area Symbol Portrayal Study

Caution Area Portrayal Study (Regulation, Colour and Symbol Layout)



Polygon symbol portrayal in hazardous area – In case of rock which covers and uncovers

- Tried to color the colors of the lines of dangerous areas, obstacle areas and types of fairway symbols in order to distinguish the colors portraying the dangerous areas from other colors -> magenta or purple.
- When marking congested areas, a representative symbol is portrayed in the center. Conducted other visibility tests.

Line Color

- RGB 109%, 44%,145%

Area Color

- RGB 236%, 0%,140% / Alpha 30%
- Area colors are transparent so that purple is shown when portrayed on the sea.

“ 2018 Pilot Project

It is necessary to establish a foundation for policy direction and goals, although there have been more tasks found to be addressed than problem solving.

2018 Pilot Project

- Proposal of 3 types of 10 ENC symbols selected as the main symbol and pre-design by 3 modes.
- Created & tested 10 kinds of symbols made by design tools with SVG production tools.
- Created detailed proposal manuals, basic design guides, and symbol production process guides for each symbol.



1. Design attempt to portray from multiple perspectives beyond the limits of portraying traditional paper chart/ENC symbols.
2. Prototypes inherited the symbol form of traditional paper charts, then an intuitive prototype form was created for ENCs. Three-type prototypes of simplified simples on small-scale were developed and were suggested in daytime/night/twilight modes.
3. Identified the basic improvement directions for water depth, color representation of land, minimum size for readability of symbols, line splashing, and color regulation suitable for ENCs.
4. Prepared the foundation for improving the SVG production tools for ENCs by summarizing the limitations of producing appropriately designed symbols with SVG production tools.

Thank You