

Visualization of Information Display at Main Control Room

208

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CRT
가

HMI(Human-Machine Interface)
가

HMI 가

Abstract

An advanced main control room is planned for the next generation of nuclear power plants in Korea. Display devices such as LDP(Large Display Panel) and CRTs(Cathode Ray Tubes) are going to be utilized in that control room. Operating staff would have to perform tasks by monitoring displayed information about overall plant situation, subsystems, equipments, and components. However, if operators work with these new types of HMI(Human-Machine Interface), there are a lot of chances for unexperienced cognitive problems. Therefore, the designers of HMI should consider not only the information to be represented on display devices, but also visual information processing by operators and their cognitive limitations during information processing. This study reviews human's visual information processing process, classify information to be represented on display devices at the advanced control room, and possible representation formats for the classified information. We hope that the evaluation of HMI at the advanced control room would consider the result of this study.

1.

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System80+,
가 가

HMI

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가

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CRT

가

가

2.

one-sensor-one-display

mental model 가

HMI 가

mental

model

1)

[Burns 95].

Burns (95)

11가

2)

Rasmussen(1985)

< 1 >

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	Miss-Data polar star efficiency balance	Vicente EID Miss-Data Dinadis & Vicente	KWU Miss-Data polar star
		Vicente EID Goodstein GNP Dinadis & Vicente	Goodstein GNP
		Beltracchi Paulsen Linsay Vicente EID Dinadis & Vicente	KWU Beltracchi Paulsen Linsay Vicente EID Goodstein GNP Dinadis & Vicente
		mimic & video	Vicente EID mimic & video Dinadis & Vicente
	mimic & video	mimic & video	mimic & video

< 1: Burns 11가 >

Pederson(1999)

(,), (,)

1) Burns(95)

(functional information),

(physical information)

2)

diagram, overview display(Paulsen, 1996), mass data display(Beuthel, 1995), ecological (Vicente, 1990), functional display(Goodstein, 1995)

mimic

), (, , ,), (.....), (,), ,
 . , (image), , , , , , , ,
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< 2: Pederson >

Burns Pederson 가
 , Burns
 Pederson ,
 HMI 가
 가 .
 가 ,
 (function-based organization) ,
 organization) . (procedure-based

mimic diagram .
 mental model ,

Burns (95)가

가

, Lohse (1994)

. Lohse (1994)

11가

10가

가

7

가

Pederson (1999)

7가

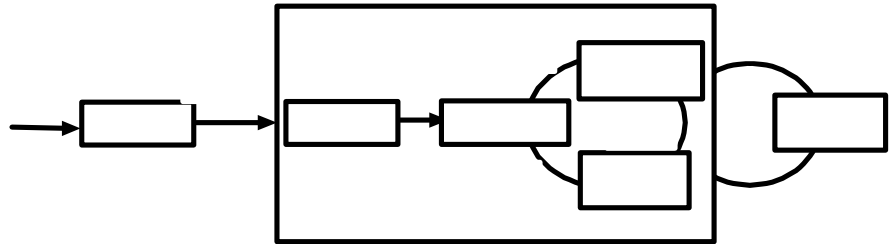
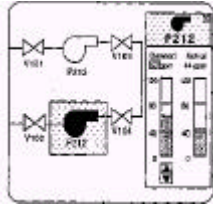
	1, 2, 3) , , , star , polar coordinate	,
	, ,) pull-down	
(structure diagram)) ,	,
(network chart)) , PERT,	,
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< 1: >

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(visual primitive)

(encoding)

(schema)

(recognize)

(diagram)

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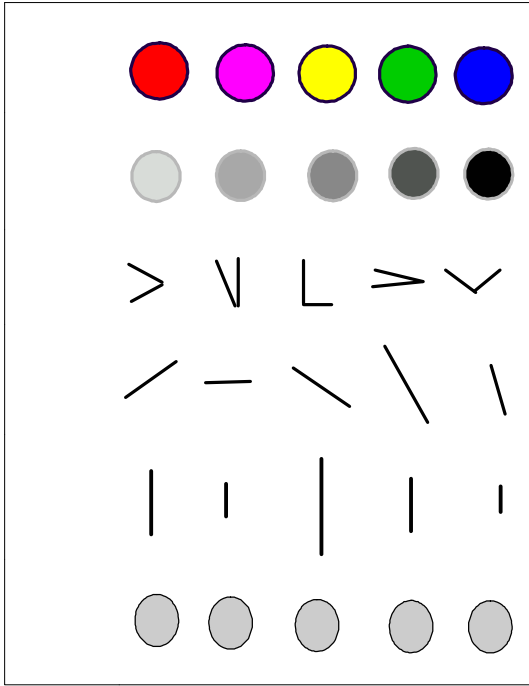
(2).

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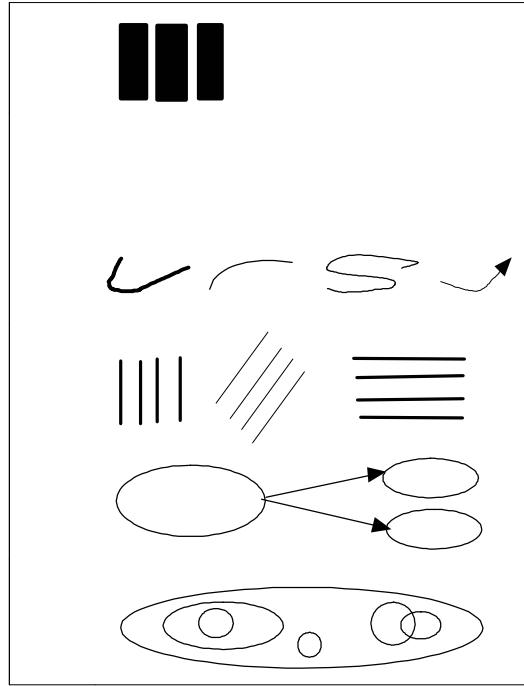
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< 2:

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Gestalt

, Gestalt

(Working Memory Short-Term Memory)

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가

(association)

Gestalt

< 4 >

< 4 :

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knob

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가 pixel

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4 .

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

[1] 가, (1999),

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