

ISO 10075-2:2024-07 (E)

Ergonomic principles related to mental workload - Part 2: Design principles

Contents

Page

Foreword..... v

Introduction..... vi

1 Scope..... 1

2 Normative references..... 1

3 Terms and definitions..... 1

4 Design principles..... 2

4.1 General principles..... 2

4.2 Design principles in relation to work organisation..... 3

4.2.1 Perform system design reviews and include prospective risk assessment..... 3

4.2.2 Individuals' and team work-related objectives..... 3

4.2.3 Extended reachability..... 4

4.2.4 Flexibility in time allocation..... 4

4.2.5 Definition of work-related services..... 5

4.2.6 Duration of working hours..... 5

4.2.7 Time off between successive work days or shifts..... 5

4.2.8 Time of day..... 6

4.2.9 Shift work..... 7

4.2.10 Breaks and rest pauses..... 7

4.3 Design principles in relation to working tasks..... 7

4.3.1 Operating strategies..... 7

4.3.2 Continuous time constraints..... 8

4.3.3 Flexibility of decision-making..... 8

4.3.4 Ambiguity of task goals..... 9

4.3.5 Complexity of task requirements..... 9

4.3.6 Time sharing..... 10

4.3.7 Dimensionality of motor performance..... 10

4.3.8 Mental models..... 11

4.3.9 Parallel versus serial processing..... 11

4.3.10 Decision support..... 11

4.3.11 Sustained attention..... 12

4.4 Design principles in relation to job..... 12

4.4.1 Social interaction..... 12

4.4.2 Dependencies on others' task performance..... 13

4.4.3 Identical task requirements..... 13

4.4.4 Confidential communication..... 14

4.4.5 Changes in task-related activities with different demands or types of mental workload..... 14

4.5 Design principles in relation to work equipment and interfaces..... 14

4.5.1 Design the socio-technical system transparent for the user..... 14

4.5.2 Re-evaluate after adopting an assistance system to an existing system..... 15

4.5.3 Time lag..... 15

4.5.4 Adequacy of information..... 15

4.5.5 Ambiguity of information..... 16

4.5.6 Signal discriminability..... 16

4.5.7 Redundancy..... 16

4.5.8 Compatibility..... 17

4.5.9 Accuracy of information processing..... 18

4.5.10 Controllability..... 18

4.5.11 Control dynamics..... 18

4.5.12	Tracking requirements	19
4.5.13	Error tolerance	19
4.5.14	Adjust system design	19
4.5.15	Anticipate shifts in operating states and potential consequences	20
4.5.16	Coupling in human-machine arrangements	20
4.5.17	Adaptable and adaptive human-automation interaction	21
5	Information and training	21
Annex A (informative)	Design principles and their relation to the impairing consequences of mental strain	22