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Thesis Paper "Visual Ergonomics and the Second Monitor in the table"

The following points are to be understood as an argumentation for the planning of ELEMENT ONE monitors. The listed theses lead to a necessary transfer of viewing habits and viewing capabilities to the meeting culture and the technology to be used. The questions in this regard are, for example:

- "Who is sitting at the meeting table?"
- "Why doesn't the participant see what is presented?"
- "Why doesn't the participant adequately perceive what is being seen?"
- "Why do you need integrated monitors at the participant's seat?"

These aspects and the resulting conclusions for more effective rooms and meetings and the need for a "second monitor" are explained in the following five chapters.

The Eye

Research says that only 10% of what we call "seeing" happens in the organ "eye".
Vision trainers report sometimes astonishing compensatory abilities of severely visually impaired people who are able to cope excellently with everyday life despite considerable defective vision.

The goal of such training is therefore not to train the eye organ. Rather, it is a matter of optimally sharpening and utilizing the entirety of the sensory organs. Seeing is therefore more than just the physiological processing of electrical impulses and stimuli.

The development and socialization

There is myopia, which is manifested by changed behavior until adulthood. It is necessary to know that a person is born with a slight farsightedness - the eyeball is "too short". The eye now adapts to the suitable visual habits by means of length growth of the eyeball until the age of about 20. Why?

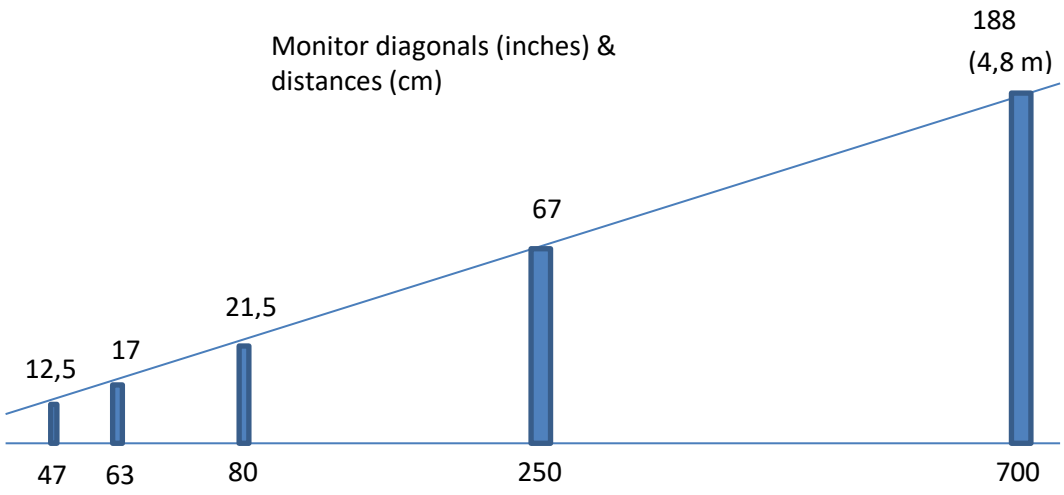
The human body strives to save energy and not to use muscles unnecessarily. Therefore, the optimal viewing distance for most activities now seems to be a distance of about 30 cm or 50 cm. This corresponds to the viewing distance on a smartphone or the viewing distance on a notebook. Recent studies revealed frightening figures, which can be traced back to the use of smartphones, console games, television and (school and university) PC work at a young age. According to current knowledge, this defective vision is not reversible; the now "too long" eyeball will not get any shorter. By the way: The phenomenon of presbyopia does not have a compensating effect, it simply comes with aging.

The current figures in detail:

- *Proportion of European population with more than minus 0.75 diopters in the **55-59** age group: **28%.***
- *Proportion of the European population with more than minus 0.75 diopters in the age group **65-69** years: **16%.***
- *Proportion of the European population with more than minus 0.75 diopters in the **25-29** age group: **47%.***
- *Proportion of the European population with more than minus 0.75 diopters in the **25-29** age group in the near future: **90%.***

This leads to the question: How must a **meeting room** be equipped, which already currently accommodates almost 50% myopic people (tendency: exponentially increasing)?

If you want to consider this pathological point of view, the technology used and the distances to the display medium are mandatory to take into account, for example: A 17 inch screen at a distance of 63 cm from the viewer is optically equivalent to a screen of 4.8 m diagonal at a distance of 7 m.



The personal preferences and activities

There is a "close-up view" that can be traced back to affinities and activities. Which "view" is normal for me at all due to my nature, my talents and my profession? Which contents do I perceive as equal or even important for gaining knowledge?

A forester sees the forest, a controller sees the tree. A forester will judge the overall and distant view as more relevant, a controller in turn rather such information, which is within a distance of a monitor.

Consequently, the question arises: How do I have to present information in a meeting room of an industrial or service company so that it is perceived as important information for the participants? Probably not at a distance of eight to ten meters, no matter how big the screen is.

The expectations and schemes

Humans unconsciously compare what they see with information they have already stored and experienced in order to save energy and time. One could call this "shortcuts" (heuristics). However, this also leads to fatal misjudgements, because what arrives at the eye as an optical stimulus is not utilized for the gain of knowledge and impulse for action.

A catchy example, which has been empirically verified in accident research: The car driver overlooks the motorcyclist and takes the right of way from him - because he simply "did not see" him .... because he expected a car or the image of a car.

Ergo: What do the meeting participants expect? Give them something that fits the mold: A visual information in the style and size of a desktop monitor!

The „Belly Feeling“

What is the so-called "relevance barrier"? Cognitive science has established that the first few seconds determine whether information is classified as relevant or irrelevant. This happens unconsciously, in the gut, so to speak.

In other words, conscious perception, which is systematically evaluated in the brain, is not so decisive here. It is said that only about 60,000 neurons are involved here. The emotion, the "gut", the limbic system fires without time-consuming detours (and thus already a fraction of a second faster ...) with about 300,000 neurons. In prehistoric times, this was also crucial for survival: Do I have to flee, do I have to attack or is the situation without danger?

Transferred to the meeting: The numbers, data and facts in the table shown may be correct and important. However, since the presentation is unreadable, far away, contrary to the wishes, inclinations and habits of the participant, since the room may also be poorly ventilated and lit, and since there are cables all over the table, this tends to be pointless already at the beginning - at least suboptimal.

The external and first stimulus, the pointer for the first gut evaluation stands for the Neanderthal in us with insufficient room and AV equipment on "flight" or "attack". This leads to discomfort. There can be explained, appealed or explained now still so much supplementing: The effect of rational information has now literally moved into the distance for the gain of knowledge.

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