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JUNE 04, 2025

• **THEME:**

Smart glasses, Augmented Reality and Embedded AI: Towards a medical and societal disruption?

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SESSION.05

June 04, 2025

FOCUS SESSION #05

Background note for opticians and other eyewear professionals,
defining the current contexts

Toward Cognitive Laziness?
When artificial intelligence eases our minds...
at the risk of weakening them

A nearly invisible mental delegation

Artificial intelligence has become a permanent tool for mental delegation. It assists, anticipates, corrects, and recommends. As it becomes more integrated into our daily lives, through smartphones, cars, and smart speakers,it lightens our mental load.

This convenience, appreciated for its efficiency, nonetheless raises a deeper question: by relieving us of certain intellectual functions, might AI be disabling our ability to exercise them?

This shift doesn't happen overnight. It begins with small habits: no longer looking for information, forgetting to memorize appointments, or no longer navigating on our own, because the machine now does it for us (often faster and more accurately).

Cognitive laziness: A silent risk

This phenomenon, often described as "cognitive laziness", results in a gradual loss of certain faculties: memory, attention, reasoning, decision-making. Not because we no longer possess them, but because we no longer use them. And like any unused muscle, the mind weakens when deprived of effort.

In an increasingly fluid and intuitive digital environment, it is our capacity for active thinking, analysis, and lasting memory that is diminishing. And this shift often happens without us noticing, so seamlessly integrated are these tools into our daily routines.

Smart glasses: Automation close to the brains

Younger generations, already immersed in a culture of digital assistance, are particularly affected. Growing up in a world where mental effort becomes optional poses the risk of never fully developing essential cognitive mechanisms. The entire mental process, attention, memory, and reasoning, is at risk of being weakened.

In this context, smart glasses may become tools of constant assistance, but also potential obstacles to cognitive autonomy. They not only alter what we see, but also **how we learn to think.**

Designing technology that stimulates, not replaces

The challenge is clear: these innovations should not be rejected but reimagined.

Artificial intelligence must not replace human intelligence, but amplify it. This means designing interfaces that:

- Encourage active engagement from the user

- Provide mental stimulation features, not just simplification

- Include built-in breaks or moments of voluntary disconnection

- Maintain user control and decision-making capacity

CONCLUSION

Innovation should not lead to generalized automation. Smart glasses represent a powerful and unprecedented technological advancement, but they must not obstruct our own intelligence.
By anticipating these challenges, **optical professionals can play a crucial role**: ensuring that tomorrow's technologies support human thinking, without ever numbing it.

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SESSION #05

SMART GLASSES, AUGMENTED REALITY AND EMBEDDED AI:
Towards a medical and societal disruption?

SILMO FUTUROLOGY REPORT

BY THE SILMO NEXT EXPERT COMMITTEE

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The rise of smart glasses, powered by advances in augmented reality and embedded artificial intelligence, is redefining the very nature of optical devices.
Long viewed as futuristic gadgets, these tools are now emerging as hybrid interfaces—at the intersection of health, cognition, and digital technology.
During the Silmo Next Expert Committee working sessions, we aimed to deliver a clear-sighted assessment, navigating between technological promises, health concerns, and major ethical challenges.

Between technological promise and usability limitations

Analysis of several models currently on the market reveals a significant gap between the ambitions of developers and actual user experiences.

Ergonomics, weight, battery life, and display quality still pose serious obstacles to daily adoption. At this stage, smart glasses seem better suited to occasional or specialized uses than to a seamless, continuous, and universal experience.

Physical health:
Targeted benefits, side effects to monitor

Smart glasses offer particularly useful applications for specific groups: people with visual or hearing impairments, or those with limited autonomy. Enhanced environmental perception, instant translation, and navigation assistance represent valuable advancements.

However, extended use raises important concerns: eye fatigue, neck strain due to device weight, visual overload, and potential continuous exposure to blue light. While scientific data is still emerging, comparisons with the known effects of prolonged screen exposure suggest a need for caution. Some experts are already recommending limitations on usage time and mandatory visual rest periods.

Mental Health: A worrying cognitive delegation

Mental health was a central concern in our discussions. While embedded AI can support memory or help manage information, it may also foster a kind of cognitive disengagement. Relying on a permanent assistant might lead users to gradually lose the habit of exercising their memory, orientation skills, or reasoning.

This almost invisible delegation could prove problematic over time, especially for younger generations already deeply immersed in digital environments. Many contributors emphasized the importance of viewing smart glasses not as a substitute for mental activity, **but as a tool that activates and respects the user's cognitive autonomy.**

Digital divide and social inequality

Another key issue raised was the risk of a new digital divide. While certain profiles—especially seniors—could benefit from the simplifying functions of smart glasses, others may be left out due to lack of training, familiarity, or financial access.

Conversely, these devices could also serve as a gateway to digital tools for populations unfamiliar with traditional interface; provided that accessibility is a core part of their design.

Customizing reality and the risk to social cohesion

A more subtle phenomenon was also discussed: the possibility of filtering one's visual or auditory environment based on personal preferences. This ability to «customize reality» raises questions about social connection in a world where everyone could see and hear different versions of the same reality.

The risk of social detachment or cognitive fragmentation from a shared environment is real—and warrants serious ethical debate.

Regulation challenges and shared responsibility

There was unanimous agreement on the need for tighter regulation. While current devices may meet existing standards, these frameworks appear inadequate in the face of rapidly evolving innovations. The opacity of embedded systems, the collection of sensitive data, and the potential for behavioral influence all call for heightened vigilance.

The role of opticians—as trusted intermediaries between technology and users—is likely to evolve. Some experts foresee that opticians could one day detect cognitive or psychological disorders related to intensive use of these tools—or at the very least, be equipped to provide informed guidance to patients.

Committee recommendations

To support the responsible evolution of these technologies, the Committee proposed several avenues:

- Encourage independent studies on visual, cognitive, and social impacts.

- Develop ethical design charters for brands.

- Include training modules for optical professionals.

- Promote smart glasses that complement, not replace, human intelligence.

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