



## FAQs on Cognitive Load

### What is Cognitive Load?

SOMAREALITY understands Cognitive Load as a digital biomarker for cognitive (e.g., attention) and emotional (e.g., stress) processes, as it refers to the effort our brain must exert while processing information.

### What is a digital biomarker?

A digital biomarker provides direct insights into the biology of a person. SOMAREALITY provides Cognitive Load as a first digital biomarker for human behaviour analysis.

### Can Cognitive Load be modified?

According to John Sweller's Cognitive Load Theory, there are different types of cognitive load, that can be modified. Our Cognitive Load algorithm will show you how Cognitive Load changes over time or can change depending on the task and the person.

### How do you measure Cognitive Load?

At SOMA, we calculate an approximative value of brightness on pupil dilation, calculated from the luminance of the VR display. This separates neurological and light-induced effects. It allows us to model Cognitive Load at runtime for users of VR headsets.

### What does the Cognitive Load value tell me?

The modelled cognitive load is displayed on a scale from 0% to 100%, indicating lower or higher cognitive load. It enables individualized, abstracted insights, e.g., if someone is stressed or has the capability to learn or act properly (e.g., decision making).

## What does SOMA offer with Cognitive Load?

Cognitive Load is now available as a Software Development Kit (SDK) for Unity. SOMAREALITY provides Cognitive Load as a digital biomarker for human behaviour analysis. It can facilitate more adaptive and individually tailored VR experiences.

## Why should I choose SOMA's Cognitive Load SDK? What is the benefit of SOMA's Cognitive Load?

The used Cognitive Load algorithm has been scientifically validated in numerous publications. As we implemented a white-box approach, we can determine precisely which parameters contribute to the value of Cognitive Load, enabling personalized feedback. Our Cognitive Load is modelled based on pupil dilation, filtering out light-induced effects. This enables real-time insights in cognitive and emotional processes.

## Do I need an extra eye-tracking hardware?

No, just a head-mounted display (HMD) with an integrated eye-tracking device with access to pupil dilation. We recommend using *Pico Neo 3 Pro Eye with Tobii Ocumen*.

## For which hardware providers do you offer an interface?

We recommend using *Pico Neo 3 Pro Eye with Tobii Ocumen*, but integrations for, e.g., HTC Vive Pro Eye 2 or Varjo XR-3 will be released soon.

## Does the cognitive load calculation need an online connection?

The SDK works with the devices built-in hardware. Therefore, the calculation of the cognitive load does not require a constant online connection.

## Which Integrated Development Environment (IDE) do you support?

Cognitive Load is now available as an SDK for the game engine Unity.

## What are prerequisites for using the Cognitive Load SDK?

The SDK only needs access to the pupil dilation (via an integrated HMD eye-tracking device). We recommend using *Pico Neo 3 Pro Eye with Tobii Ocumen*. To install the Cognitive Load SDK please follow the instructions, obtainable upon request.

## How can I install the Cognitive Load SDK?

Installation is easy and usually takes less than 10 minutes. To install the Cognitive Load SDK please follow the instructions, obtainable upon request.

### Contact



Soma Reality GmbH  
Ullmannstraße 16  
1150 Wien

+43 6767731721  
hello@somareality.com  
www.somareality.com

## How is data stored?

As we only provide the Cognitive Load SDK, no data is stored. However, as sensitive biometric data are processed, your engineers should put special focus on data security.

## Licensing: How can I get the Cognitive Load SDK?

We offer a free trial period of 6 months including technical support. You can join the waitlist for our Beta-Testers here: <https://somareality.com/CL/>

## Licensing: What happens after the free 6-month trial?

Our Beta-Phase will come to a close mid 2023. After that period, you will be able to purchase Cognitive Load SDK as part of a larger application framework that will also offer packages for gaze tracking, saccade behaviour, attention and more. Pricing will be announced upon release.

## What are primary use cases for the Cognitive Load SDK?

Cognitive Load enables real-time insights into users' cognitive and emotional processes, which can be useful across a wide variety of applications. Our use cases range from life science (e.g., personalized therapy) over adaptive training/education simulations (e.g., medical training) to usability/prototyping testing (e.g., workplace optimization).

## What can I do with the Cognitive Load SDK?

Our Cognitive Load SDK enables abstracted neurological insights in a low-cost, controlled, and risk-free environment. It facilitates more adaptive and individually tailored VR experiences and thus, creating truly user-centred and interactive applications in the future.

## Why is it important to consider Cognitive Load in VR and other digital environments?

As users undergo similar emotional and cognitive processes and perform similar behaviours as in real-life scenarios, combining digital technology such as VR with our Cognitive Load SDK, can help to gain an accurate understanding and insights into a user's experience.

## Why is it important to consider Cognitive Load in general?

The effort our brain can exert at a time is limited by working memory capacity. Cognitive Load can be used to gain relevant insights into one's current cognitive load to give personalized feedback and understand human behaviour.

### Contact



Soma Reality GmbH  
Ullmannstraße 16  
1150 Wien

+43 6767731721  
[hello@somareality.com](mailto:hello@somareality.com)  
[www.somareality.com](http://www.somareality.com)