NDC-AI-2-A Mental Matrix

The Mental Matrix is a powerful computing system created to handle all of an android's thought processes, sub-processes, and system management.

It is BW-E-2 Anima System compatible and gives the equipped Android all the same functionalities as a G1-N2 "Geist" Advanced Interfacing Implant 2.0.

First designed and manufactured as part of the New Dusk Conclave's Operator project, it was first used in production model androids in YE 42.

Designer:	Department Of Advanced Research And Development (D.O.A.R.A.D.)
Nomenclature:	NDC-AI-2-A
Manufacturer:	New Dusk Conclave
Fielded by:	New Dusk Conclave

History

When approaching the creation of a new, wide-spread AI for the NDC, the faction's current dominant AIs, the EVEs, were consulted, as well as AIs from various external sources. It was decided that the new AI should think, feel, and grow in ways similar to the organic populace within reason.

It was clear that a new approach would have to be taken to ensure both true sentience *and* an 'authentic' organic life experience - without reducing the new AI's ability to perform within its intended function.

In many ways, the solution was an inverse of the challenge that came from designing the Geist and Anima System. A similar two-layered approach, such as bestowing an organic mind with computer functionality - would be used to bestow a computer mind with organic functionality. One part of the mind would handle replicating the organic brain's thought patterns, personality, motivation, creativity, and so on. The other part would handle the computer portion, with all of the advanced data processing, rendering, and so on, under the control of the first part.

Together, the design would be a 'best of both worlds' solution, with minimal trade offs.

Function and Design

The core philosophy of the Mental Matrix is an implementation of the Bicameral Mind philosophy. That is, there is one part of the mind that 'speaks' by way of providing conscious thought and direction, and another that 'listens' so that it can carry out those thoughts and directions. The Mental Matrix does this by separating the AI's conscious, human-like thought away from its computer-like functions. To further reinforce this, the AI's conscious mind thinks and feels at a rate designed to mimic the standard human experience. The 'listening', computer-like sub-mind operates at full speed.

The result is that the thoughts, feelings, and general behavior of a Mental Matrix-equipped android closely mirror that of an organic human. Many of the tell-tale signs of an artificial mind are not present. One stark difference is that the AI is aware of, and has control over, much of its subconscious. The most obvious example of this are the use of 'sub-processes', a sort of micro-program abstraction that allows the Operator to interface with the computer side of its mind.

The specific details behind how the Mental Matrix is constructed and operates are largely obfuscated. It shares many similarities with the NDC's Anima System and seems to rely heavily on quantum states to pack an immense amount of computing power into a relatively small package.

Sub-Processes

Sub-processes are interpretations of an AI's will turned into executable code. They allow a non-computer mind to perform tasks in a computer-like fashion. They can be simple, such as 'calculate this equation', to complicated, such as 'when I receive a signal that matches this encryption key, run an analysis on it and present the findings to me'. Some AIs go a step further and proscribe simple personalities to their sub-processes as internal sounding boards.

In most cases, sub-processes last only as long as the job they were created to do lasts. They can be stored and re-used at a later date, as appropriate.

An AI can manage and review their active sub-processes in whatever fashion they prefer. Most use a HUD element or dialog box that appears within their vision when requested.

Semi-intelligent sub-processes allows the Mental Matrix to exert incredible levels of control over a system. For any computer-operated role within that system, a sub-process can be designed to execute all of the required commands and responses. In this way, tasks that might typically take twenty or thirty people can instead be handled by a single android, so long as those tasks can be managed remotely. In the event that something falls outside of the sub-process' capabilities, it is brought to the active attention of the AI to be dealt with directly.

If those systems are already managed by some lower level of AI, then managing them becomes even easier.

While the Mental Matrix's sub-processes make an equipped android an excellent multi-tasker, it is nonetheless possible for decisions to pile up or become unmanageable. For this reason, while it is theoretically possible to manage an entire ship's activities by a single Mental Matrix-equipped android, military doctrine requires at *least* a skeleton crew's worth of support for any vessel. Combat ships are expected to field even further crew, though the final crew count is still significantly lower than what would have previously been normal.

Security

As a modern Artificial Intelligence, the Mental Matrix uses a sophisticated suite of anti-viral and anti-hacking systems to protect itself from outside threats. These systems have the ability to learn and adapt

to a limited extent in a similar fashion to an organic's immune system's ability to respond to viral or bacterial threats. Under a particularly heavy attack, an Operator might even appear lethargic as available resources are consumed to ward off the threat.

The separation between the conscious, human-like mind and the computer-like sub-mind makes hacking a Mental Matrix a challenging task. The conscious mind can pass on commands and messages, as well as manage various tasks and sub-processes, but nothing resembling code or commands travels back to the conscious mind. Any hostile actor able to bypass the AI's various security systems would find that any files or processes they accessed to be swiftly locked off or restarted by a user with superior access.

The AI's conscious mind is completely unreachable by external systems in nearly all cases. The one exception to this would be when an AI needs an update. This requires numerous safety checks on the part of the AI before it begins and has a variety of safeguard measures in place during the actual update process; it cannot be initiated externally. Such an update is the one time when the conscious mind receives external code. Most Mental Matrix-equipped AI prefer a a highly secure location to perform.

In short, while a Mental Matrix-based AI might find themselves 'sick' from time to time, they are likely to recover on their own with no lasting effects.

Learning

Once the personality within the Mental Matrix is active, it is no longer possible to simply 'install' new skills and knowledge. Just like anyone else, they must train and study in order to form and maintain the appropriate pathways within their mind.

Compared to a traditional AI this can seem like a waste and, in some ways, it is. The trade off is that whatever skills such an AI gains are truly theirs and have been earned through hard work. No two AIs approach problems in exactly the same way. There are no fixed combat patterns to analyze and overcome. Healthy debate can take place on the finer points of how to fix a given system.

These differences, formed through active study and repetition, are thought to be enough of an advantage to make up for the trade off.

Appearance

A matte black container in roughly the same shape and size as the human brain. Coupling ports at the base allow it to attach to the spine, while data ports in the front give it direct access to many of the body's sensor systems.

Availability

Mental Matrices are fielded exclusively by the NDC's military and are not intended for sale.

OOC Notes

Whisper created this article on 2020/10/04 18:47.

- Approval Thread

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https://wiki.stararmy.com/ - **STAR ARMY**

Permanent link:
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Last update: **2023/12/21 04:23**