# Electroptic/Quasitransistor femtoprocessor (EQFM)

The Electropic/Quasitransistor Femtoprocessor is a computational component designed to function in place of traditional transistor processing units providing faster computing performance as well as a reduced risk of failure when compared to conventional alternatives being largely unaffected by electro magnetic pulses.

The Electroptic/Quasitransistor Femtoprocessor is produced by the Lazarus Consortium beginning in YE 37

## About

The EQFM at its most basic is a self-organizing component that functions both as an optical transistor and traditional electromagnetic transistor. The technology is use to construct powerful processing units that reduce abstraction by growing physical circuits for operations rather than running software allowing for faster, more accurate processing.

Functionally this means that the EQFM represents a means to have the unique kind of processing power and capability that was formerly only obtainable by farming maesus. With this technology it is instead possible to simply manufacturing replicas allowing for tighter quality control and output. Due to this improved manufacturing capability old flaws have been virtually eliminated, the potential of product malfunction such as berserker scenarios seen in Winter II prototypes that had been developed by the LSDF at the time prior to the EQFM's production.

## History

The attempt to create what would eventually become the EQFM's hardware began as an attempt to produce the means and techniques to replace the need to grow Sourcian Maesus in farms for computing uses. The intention was to facilitate the construction of artificial Maesus equivalents in a controlled industrial setting reducing the time and cost of large scale farming projects that came with the risk of wastefully producing nonviable products.

The technology to do this is derived from an organ of a species known as a Sourcian - specifically the maesus: the brain of the organism which is “far more like a ball of coral or amber than a pink squishy brain”. This structure being composed of both logical structures as well as neural structures, made of similar valve-like quasitransistors, formed naturally having evolved as an alternative to conventionally biological neurons proved invaluable as a computing resource providing a compact, powerful computing system capable of processing in both a manner similar to neurological systems in traditional brains, while also having the capacity to preform logic based operations typically limited to artificial computer systems.

This miracle of living mineral called the Sourcian maesus was quick to be farmed, with lobotomized

simpler versions of it being applied to fulfill computational and control functions in a wide variety of Lorath military hardware replacing more traditional quantum or neural computers. Unfortunately the lobotomizing process used to make the maesus units safe for use was found to also reduce it's capabilities leaving the full range of a natural maesus' processing capacity out of reach.

Determining that the losses of performance were unacceptable for military applications a research project was rapidly started focused on better understanding the function and anatomy of the maesus in order to allow the replication of the unit as a whole using artificial processes removing the need to rely on naturally grown specimens.

This research would eventually culminate in the EQFM allowing the production of wholly artificial maesus to be produced greatly increasing their potential uses while removing the more dangerous caveats of their natural kin.

## Technical Information

As an electronic component, the electroptic/quansitransistor femtoprocessor EQFM is a move away from conventional transistors, toward valves-like techniques (which rely upon arc phenomena of electrical charge shooting across a void in special conditions just like lightning). The reason for doing so is that a conventional semi-conductor transistor requires a physical change in order to switch from its information states - a requirement that the valve-like technique does not. Normally this physical change takes time which limits the number of physical changes a second a processor can make is measured as its clock-speed; how many hundreds, thousands or millions of times it can switch (measured in hertz, such as gigahertz or megahertz or terrahertz or petahertz, for example).

By not relying on electrical interactions with the material of the transistor, the valve is not restricted by this limitation and can state-change many many times faster. Conventionally valves are however encumbered with another serious problem: creating and maintaining environment electricity will arc or shoot across the gap which is energy efficient, reliable or resilient. Normally this meant using vacuum tubes since air “satisfies” the opposing charge of the arc, meaning the arc won't shoot across the gap because electricity always assumes the path of least resistance to neutralize its charge differential of positive or negative. Worse, a conventional valve also requires heating elements, to create the ideal conditions for the arc to happen and with hot components, the mechanical parts of the valve become fragile.

The electroptic/quasitransistor femtoprocessor's solution is to be built at the femto-scale: to be so tiny that the chance for molecular interference that could potentially prevent the function of the unit by being in the way between the electrodes of the valve and stop the arc is so low that the conditions are considered already ideal, requiring no vacuum and no heating. Even better, due to not relying on changes in a substance in response to electrical current, the EQFM cannot be “cooked” or “locked” into a solid-state by ECM and EMP equipment.

Further improving upon the above concepts, the use of phyliaus type quasicrystals – a type of very carefully organized atoms which are deliberately placed in non-uniform procedural patterns (where there is no single axis of sheer or energy buildup, like water) added to the components also allows the electrode to not only function using electrical potentials but also by using light: either passing it like fibre optics or converting electricity into light or light into electricity for optical circuitry like a diode. The result

is a processor component which can not only process an electrical signal, but also an optical one with no clear beginning or end between the two: allowing it to serve as a bridge between optical optronics and electrical electronic circuitry.

Additionally due the organization and function of the EQFM allows it to be aligned in ways that allow function similar neural patterns, for not just objective computer-like logical processing but also subjective person or animal-like learning behaviours which can even be trained. This process is specifically controlled by a femtoscale form of Pico-Jelly rather than the maesus' own self-organizing systems in order to limit the autonomy of the EQFM and prevent possible unwanted behavior. While this makes EQFM computers less intuitive, they are also more predictable and reliable.

# OOC

Approved 09/07/2015