The Clock Has Stopped
But Computer Technology Has Taken A Great Leap
with the VisiSoft CAD environment

As predicted, computer clock rates leveled off around 2006
A Maximum clock rate of 4 GigaHertz is hard to find. Most are less than 3.6 GHz.

Prior to that, increasing clock rates covered up the underlying software problems
Leading to Niklaus Wirth’s Law: “Software gets slower faster than hardware gets faster.”

The need for huge increases in computer speed is still rapidly expanding
Driven by simulation of complex systems and processing large databases.

Applications counting on continued doubling of clock rates every 18 months are left behind
These include big energy users running on hundred rack parallel processors.

Parallel Processor Energy usage is in the megawatts and soaring
Consider an IBM Blue Gene Machine with 100 racks (1638 processors & 80 KW / rack)
Versus a Green Gene Machine with 1 rack (2300 processors & 32 KW) - It’s faster!
Save $1000 per year for every KW saved - ( $8,000,000 - $32,000 = $7,996,800 !)

Parallel Processor Development Time & Upgrade Time is Unaffordable
VisiSoft CAD - cuts both by an order of magnitude (10 X faster @ 1/10th the cost)

Intel is producing great Parallel Processor chips - but no one knows how to use them
VisiSoft - takes full advantage of new hardware technology, and can help improve it.

Run Times are still in days
VisiSoft - can cut run time by 4 to 7 orders of magnitude (10,000 - 10,000,000 X faster)

It’s Time To Seek The Truth And Take The Measurements
SAMPLE APPLICATIONS THAT NEED THE NEW TECHNOLOGY

1. Wave Guide simulation
2. Human Body Organ simulation
3. Global Climate prediction
4. Fluid Flow simulation
5. Biological Particle simulation
6. Chemical - Molecular structure simulation
7. Scanning, sorting, and correlating massive databases (Big Data)
8. Weather prediction in mountainous terrain
9. Power distribution simulation
10. Electro-magnetic wave simulation
11. Global HF power transmission
12. Global military planning - Multiple moving platform simulation
It is time to step up - and understand *VisiSoft* engineering technology

*VisiSoft is an extension of mathematics.*

By choosing application-oriented data spaces, designs are simplified.

**Application-Oriented Spaces require deep multi-layer hierarchical data structures.**

*VisiSoft* makes it easy to represent deep complex hierarchies with tables and conditions.

![Diagram of Application, Human Language, Software, and Computer Language Spaces]

*Understandable Algorithms require hierarchies of modules and plain English Syntax.*

Complex algorithms are easily understood when broken into hierarchies of modules - Containing processes with hierarchies of statements that read like English.

**The Separation Principle provides Engineering Drawings of Software.**

By separating Data from Instructions:
- Complex software designs are easily understood with *VisiSoft* engineering drawings.
Taking maximum advantage of parallel processors requires:

**Architectural Facilities that provide designers with the ability to:**

*Design Architectures to take full advantage of the inherent parallelism in applications*

*Design Spatially Independent Modules that can run concurrently*

**Language Facilities that provide designers with the ability to:**

*Share Data between Temporally Independent modules that run concurrently*

*Easily Synchronize Data Sharing between Temporally Independent modules*

**All this is available using the VisiSoft CAD Environment on the Green Gene Machine:**

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