A Probe into Future History: the Evolution of Existence Enhancement

Charles Ostman

Nano Electronics & Photonics Forum chair – NanoSig

Senior Consultant – Strategic Synergy Group

Senior Fellow - Institute for Global Futures

510 549 0129 charles000@aol.com

http://www.technofutures.com/charles1.html

4/23/2010

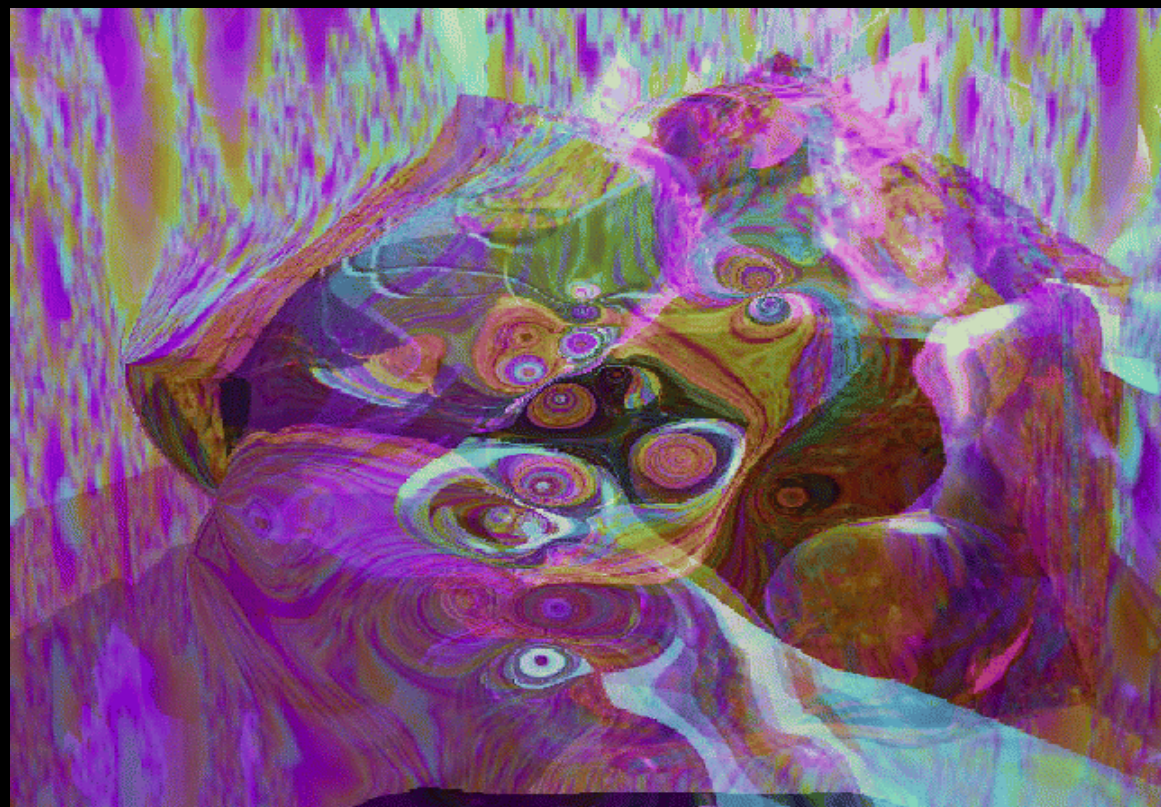
NANOSIG

THE STRATEGIC SYNERGY GROUP

INSTITUTE FOR GLOBAL FUTURES

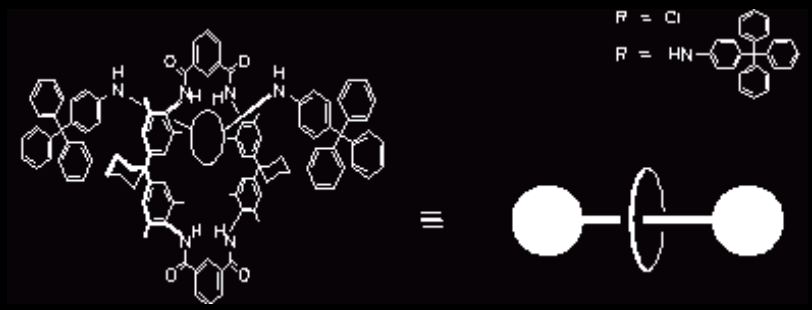
Probing The Archeology of the Future - Evolution Into the New Millennium

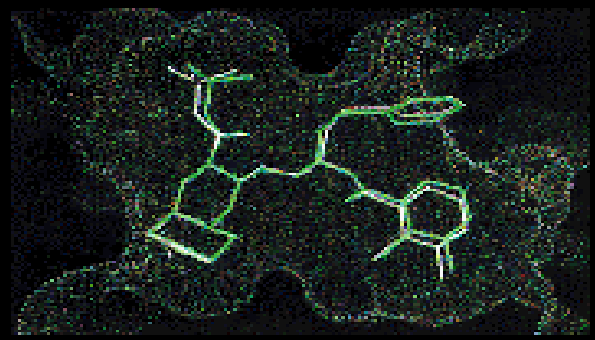
- Technology Convergence
- Cultural Morphology
- Economic Drivers
- Belief Systems



Convergence Syndrome

- It is here, at this evolutionary eventhorizon, that we, the human species, evolve into a realm where the interface boundary between the real and the virtual, the organic and the synthetic, become seamlessly infused into an ever evolving symbiosis of our own creation, and what evolves henceforth.





The Emergent Infotech / Biotech / Nanotech / Cognotech Operational Ecology

NBIC Conference

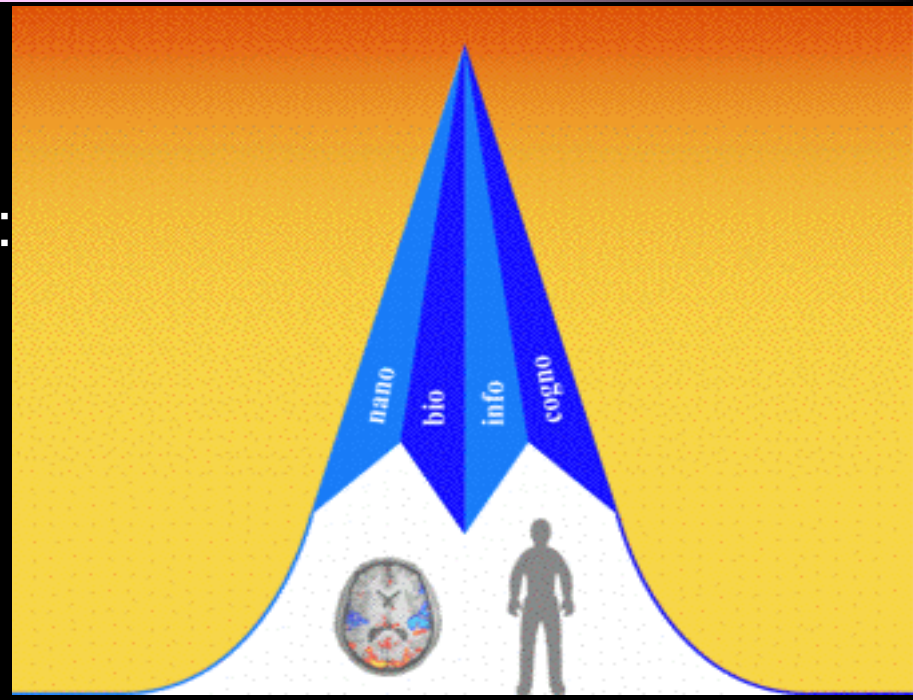
Converging Technologies

for Improving Human Performance:

Nanotechnology, Biotechnology, Information Technology and Cognitive Science

NSF/DOC-sponsored report

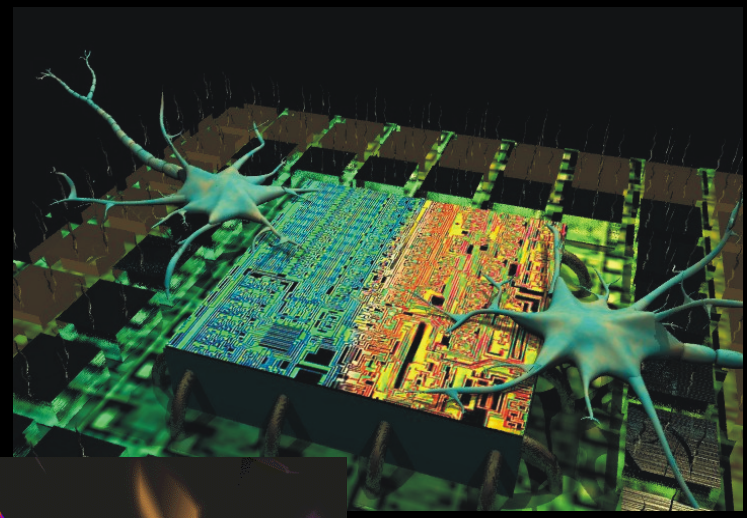
http://www.wtec.org/ConvergingTechnologies

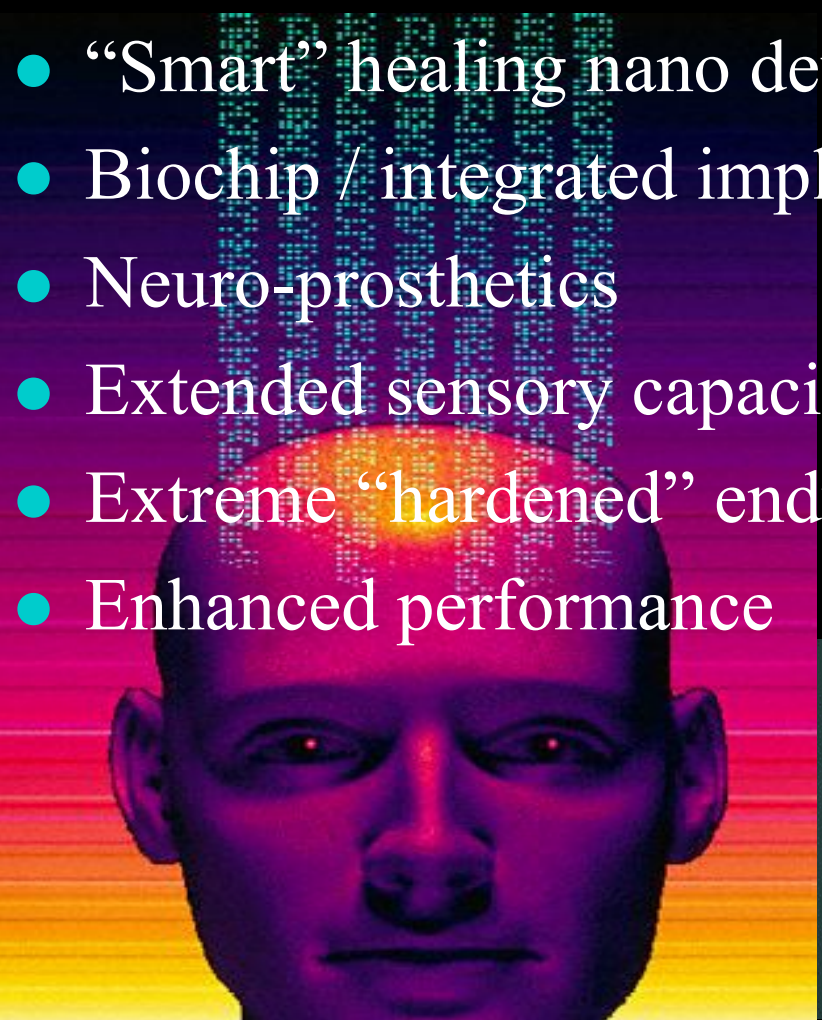


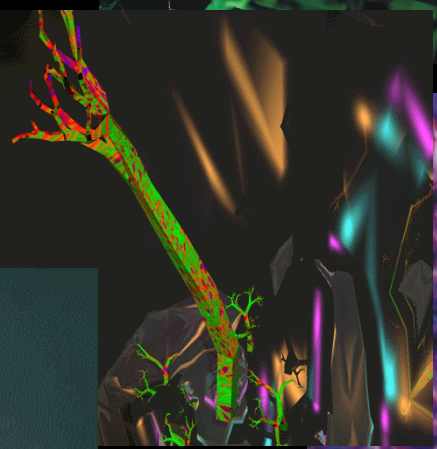
Nanotechnology Enabled

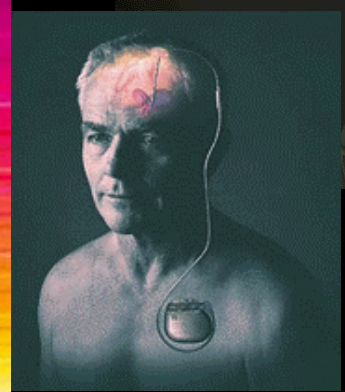
Human Enhancement, Human / Machine Interface

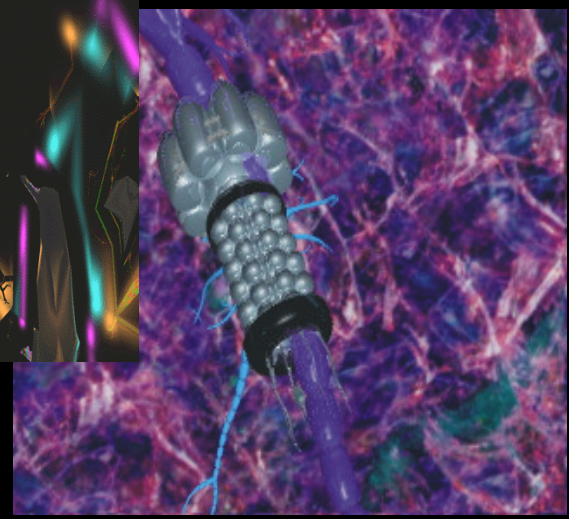
- Nano-enhanced tisuue
- “Smart” healing nano devices
- Biochip / integrated implants
- Neuro-prosthetics
- Extended sensory capacities
- Extreme “hardened” endurance
- Enhanced performance



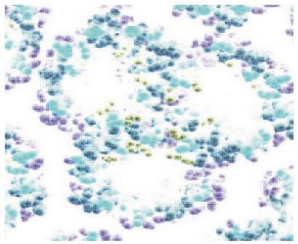






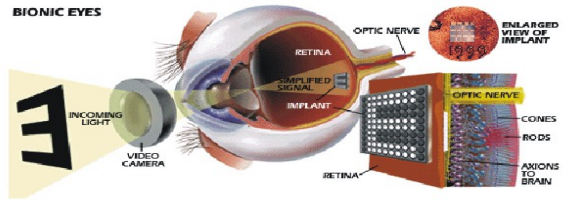


Co-Evolution with Emergent Intelligences
Genetic / Biophysical Enhancement
Accelerated Environmental Adaptation
Extended Longevity & Functionality

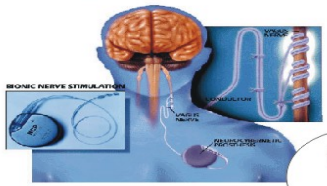


Biocompatable Molecular
Surfaces / Interface

Nano
Bio

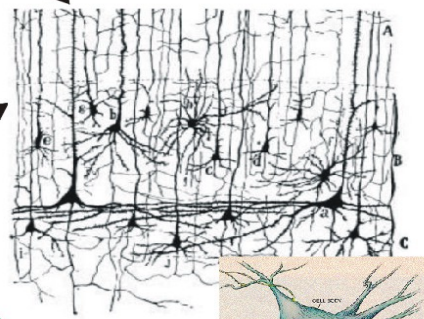


Complex Integrated Biodevice /
Functional Restoration

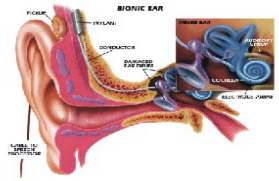


Biodevice / Implant
System Interface

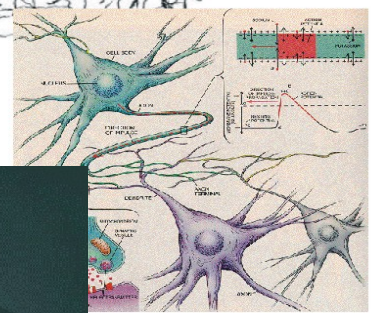
Nano
Info
Bio



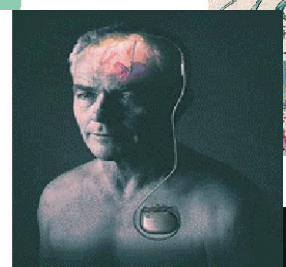
Neural
Mapping



Nano
Cogno
Bio

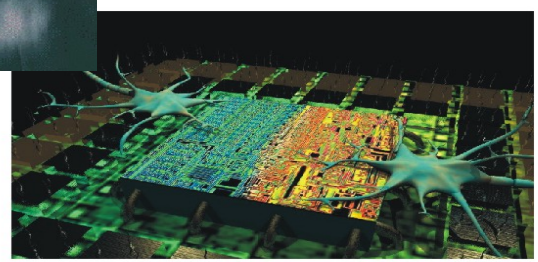


Extended Sensory Capacity
Intellectual / Cognitive Capacity
Strength, Endurance Attributes
Extended Longevity



Cellular / Neural Repair

Cogno
Nano
Bio

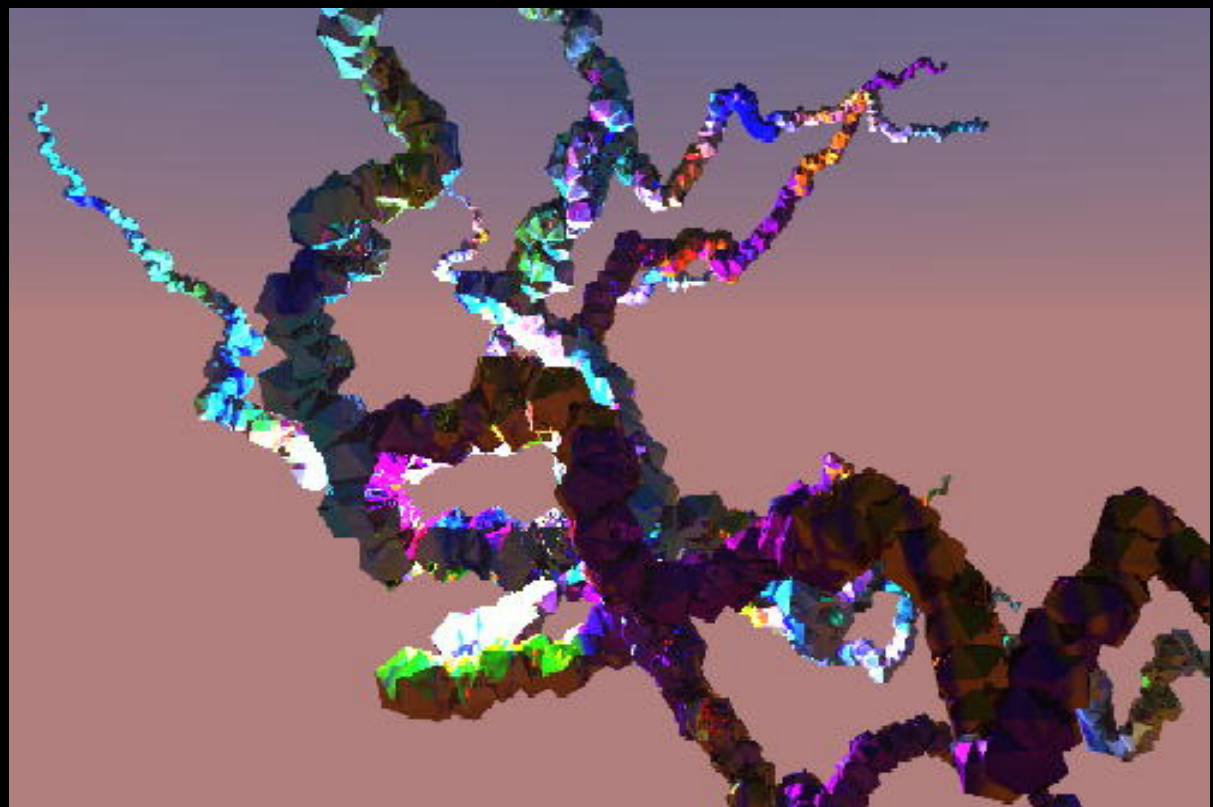


Cellular / Neural Interface

Process Dynamics of the Next Evolutionary Eventhorizon

The Emergent Operational Ecology – Translation into Virtual Nature

- Psycho-ergonomic cuing threshold factors
- Phenomenological causality linkages
- The invocation of rapture index

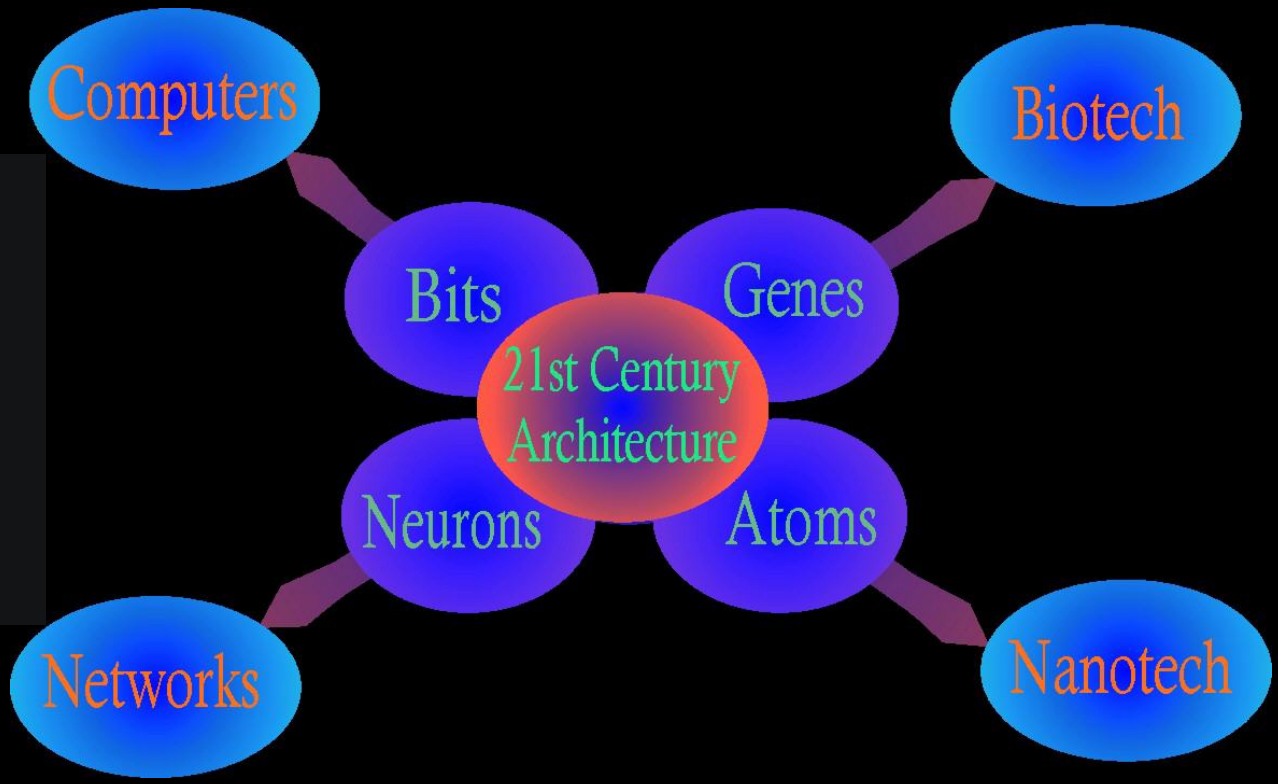


Existence Imperatives of the Evolutionary Eventstream

- Across virtually every known cultural, societal, and geographic variation of human civilization, one singular commonality has been consistently ubiquitous: an emotional, if not spiritual engagement with the aesthetic content in nature which transcends mere logical lexicon or reasoned response.
- Embedded within the innermost sanctum of the human psyche, there is an emotional engagement phenomena which I refer here to as the ***"invokation of rapture"*** index.

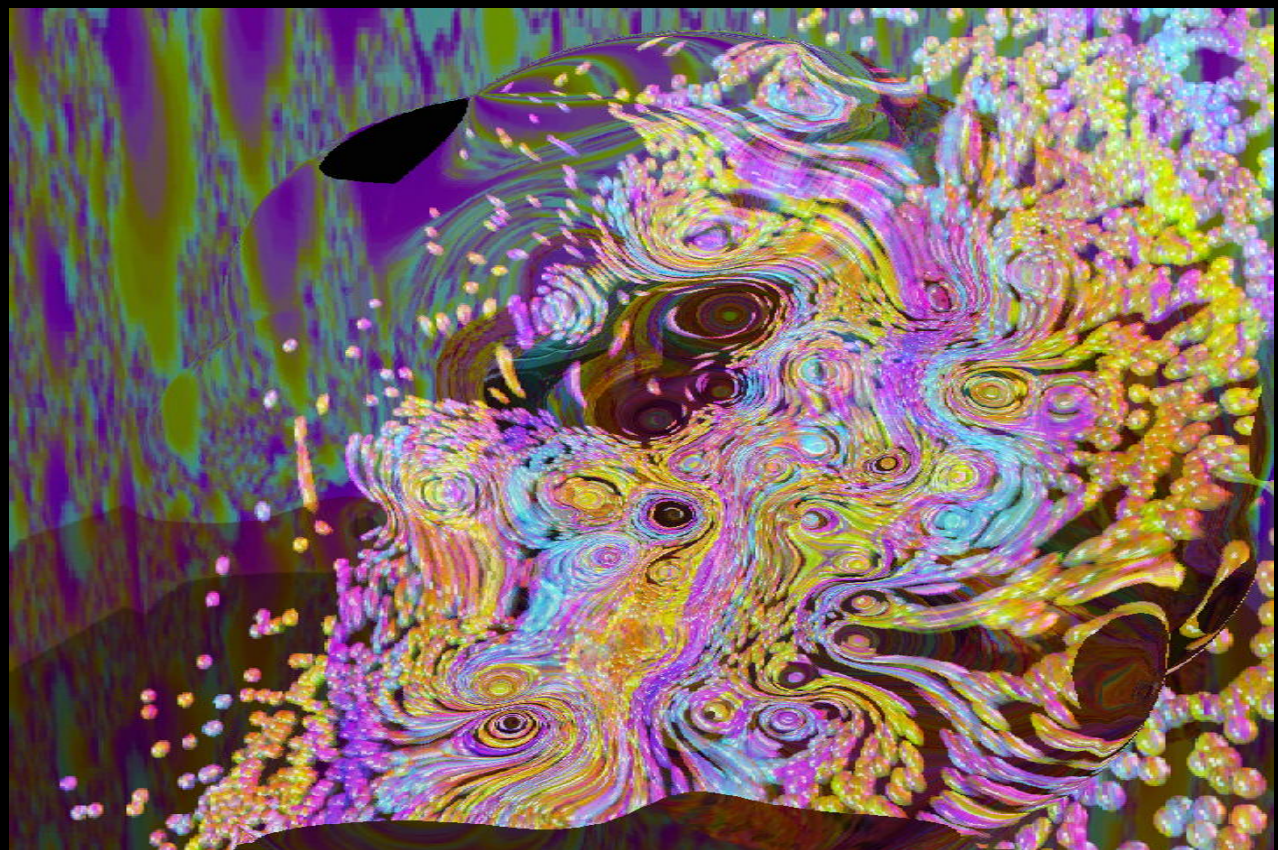
Think Different . . .
Think Holographic

- Emergent NBIC infrastructure is an evolving architecture of interrelated disciplines, technologies, organizational systems



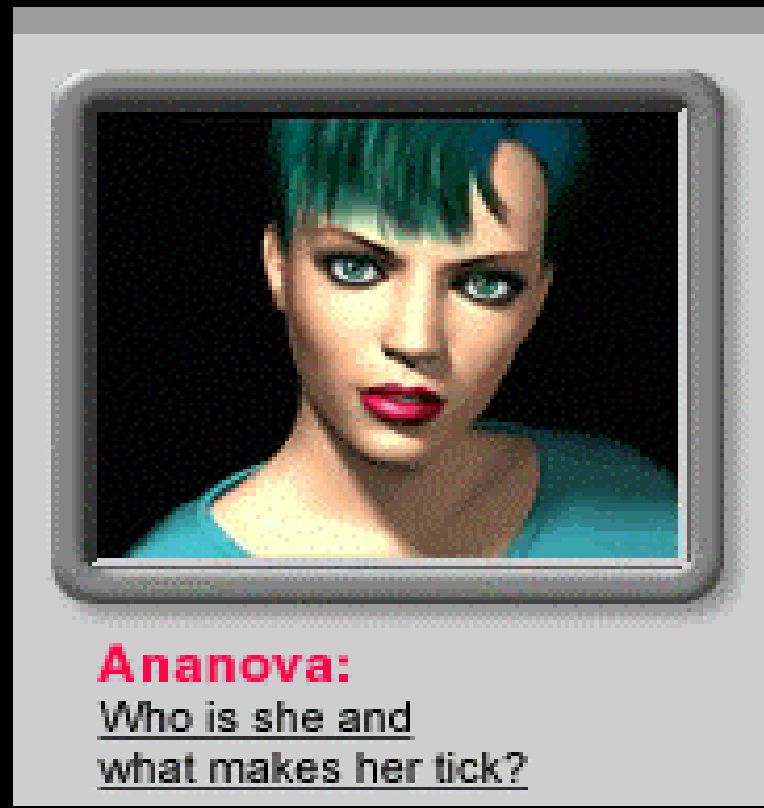
The Holographic Perspective

- All living things are systematically interconnected
- Definition of "living things" extends to systems, processes, entities which behave biologically



Evolutionary Eventstream Imperative

- Emergence of “synthetic entities” as a culture norm
- Crossing of an evolutionary eventhorizon
- Peer to peer tele-existence streaming
- Hybrid biological systems integration



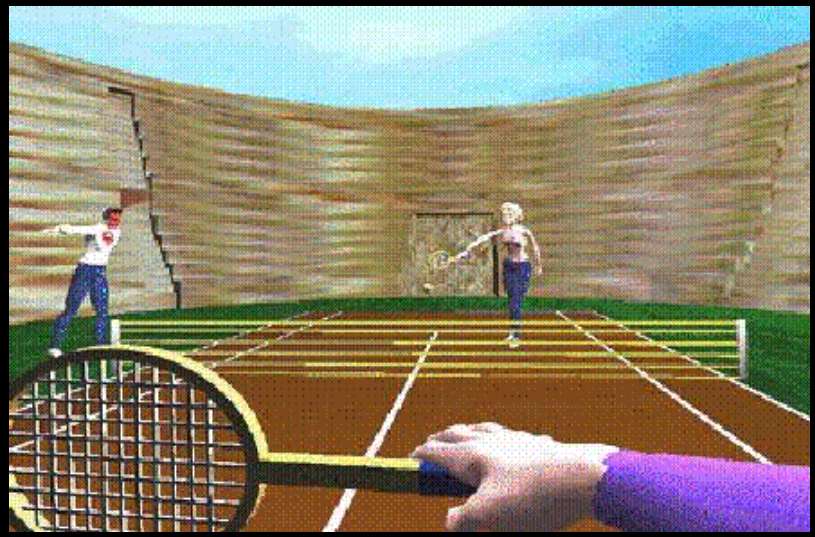
Virtual Humans - This is “Sylvie”

- She can market products, be a secretary, a help aid
- She can have any face, a programmable personality
- She is a connection interface to a higher, scalable intelligence

Virtual Humans - This is “Marilyn”

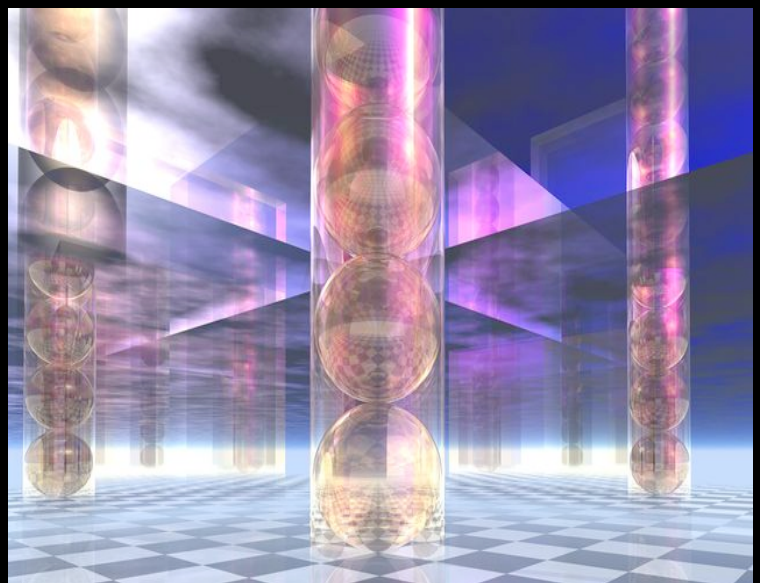
- The “invokation of rapture” effect in human form

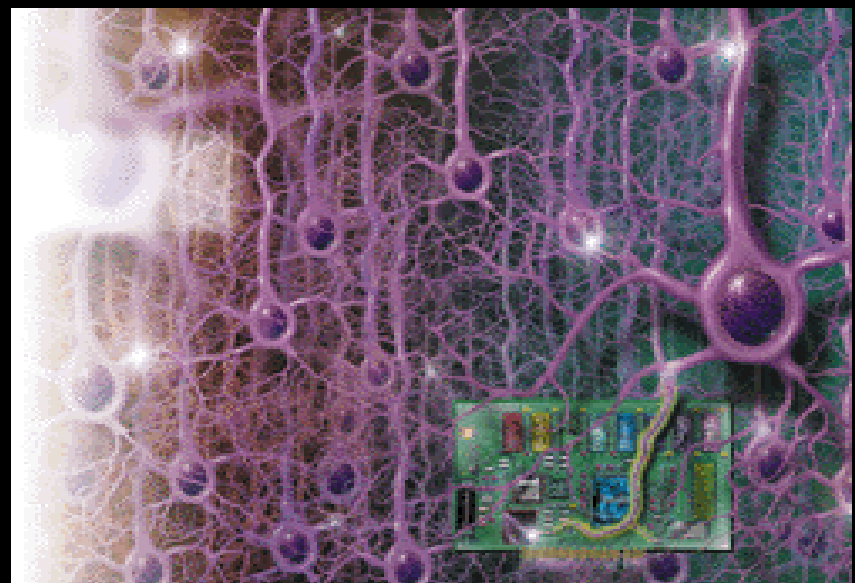
The Business of Virtual Humans



Emergent Evolutionary Eventstream - Operational Ecology Continuum

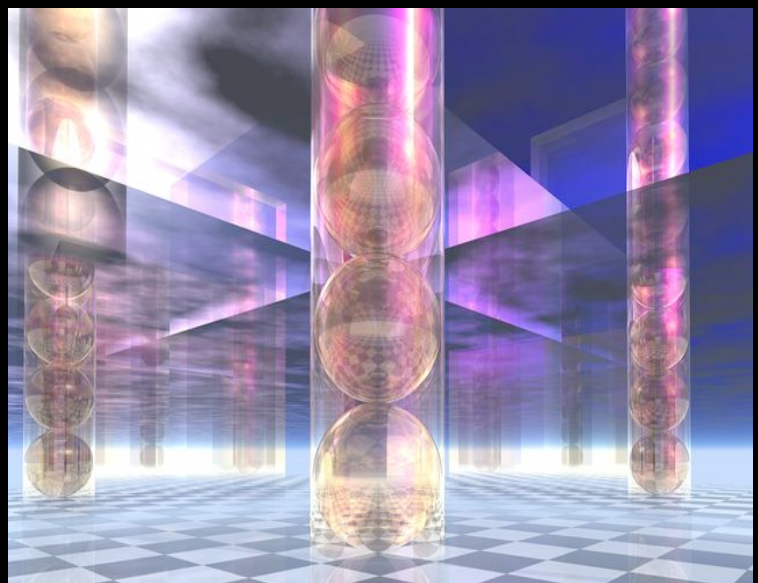
- Knowledge complexity, scale, and velocity is exceeding human capacity for mission critical decision rendering compressed into ever shortening time scales.
- Development and deployment of complex metasystems of artificial autonomous entities, synthetic lifeforms, and emergent intelligences becomes the acceptable if not mission critical "culture norm" of the near future.
- Perceived boundaries of the "synthetic" and organic, the "virtual" and the real, are becoming enmeshed into an operational ecology continuum.

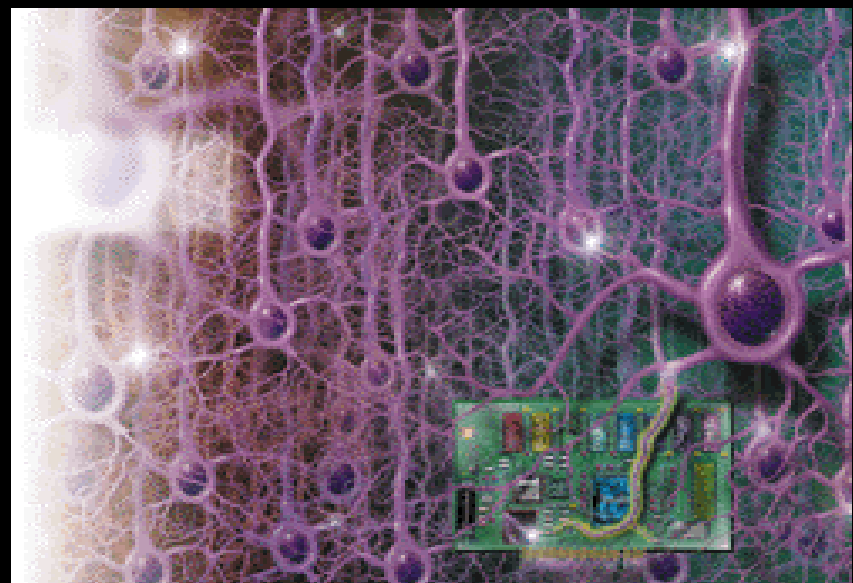




Emergent Evolutionary Eventstream - Operational Ecology Continuum

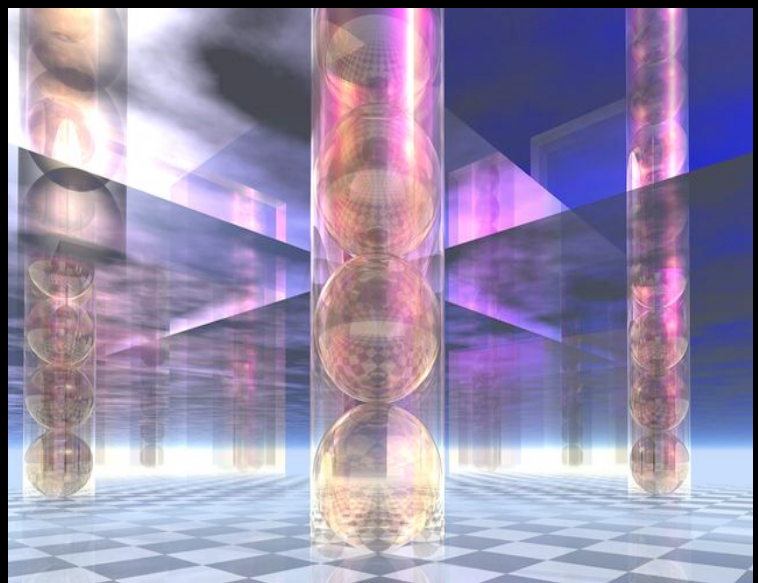
- Knowledge complexity, scale, and velocity is exceeding human capacity for mission critical decision rendering compressed into ever shortening time scales.
- Development and deployment of complex metasystems of artificial autonomous entities, synthetic lifeforms, and emergent intelligences becomes the acceptable if not mission critical “culture norm” of the near future.
- Perceived boundaries of the “synthetic” and organic, the “virtual” and the real, are becoming enmeshed into an operational ecology continuum.

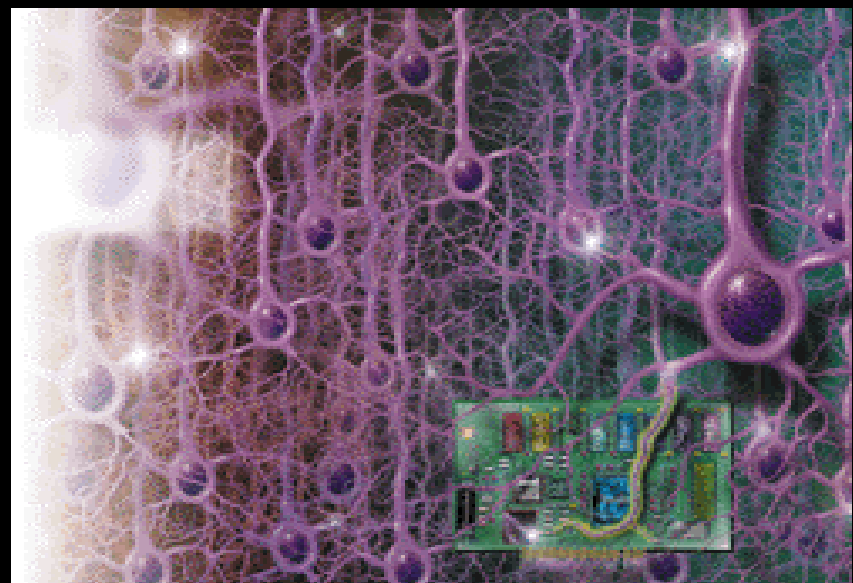




Emergent Evolutionary Eventstream - Operational Ecology Continuum

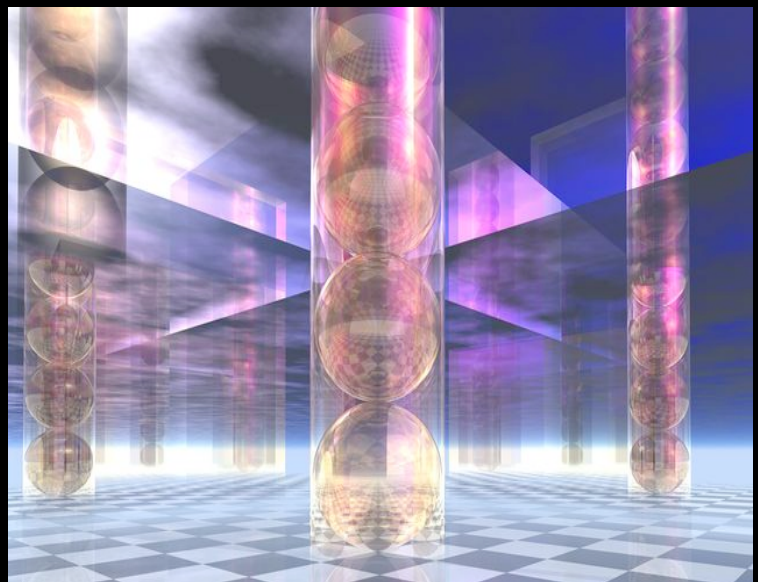
- Knowledge complexity, scale, and velocity is exceeding human capacity for mission critical decision rendering compressed into ever shortening time scales.
- Development and deployment of complex metasystems of artificial autonomous entities, synthetic lifeforms, and emergent intelligences becomes the acceptable if not mission critical “culture norm” of the near future.
- Perceived boundaries of the “synthetic” and organic, the “virtual” and the real, are becoming enmeshed into an operational ecology continuum.

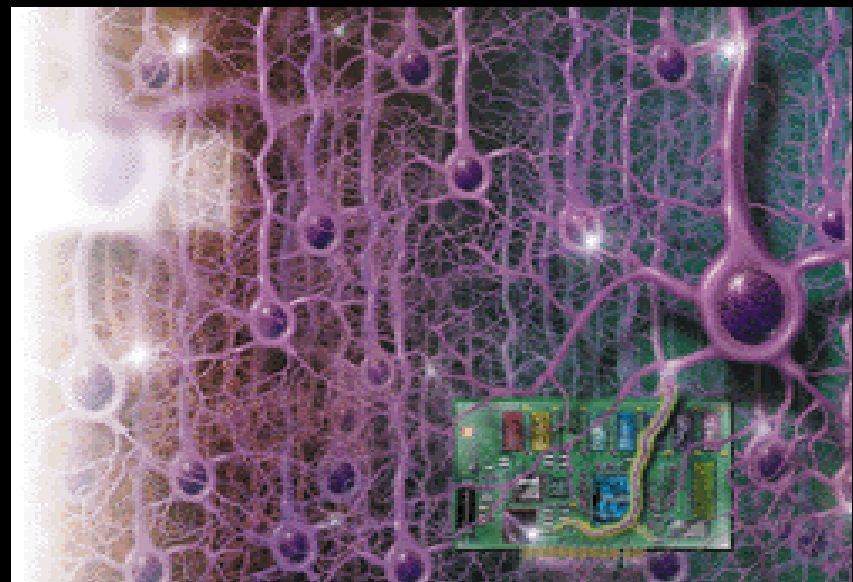




Emergent Evolutionary Eventstream - Operational Ecology Continuum

- Knowledge complexity, scale, and velocity is exceeding human capacity for mission critical decision rendering compressed into ever shortening time scales.
- Development and deployment of complex metasystems of artificial autonomous entities, synthetic lifeforms, and emergent intelligences becomes the acceptable if not mission critical “culture norm” of the near future.
- Perceived boundaries of the “synthetic” and organic, the “virtual” and the real, are becoming enmeshed into an operational ecology continuum.



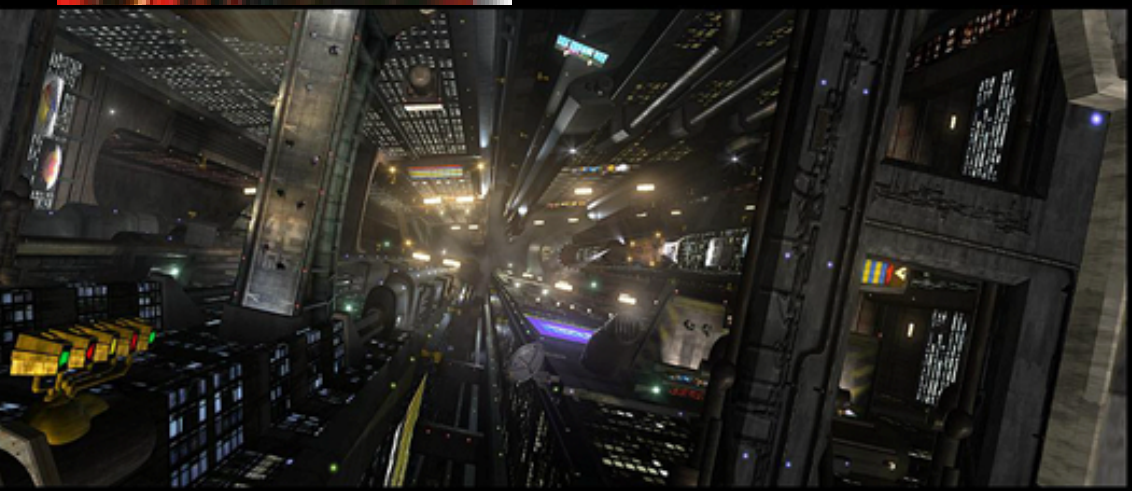


Info Bio Nano Cogno Tech Convergence – on the Forbidden Planet

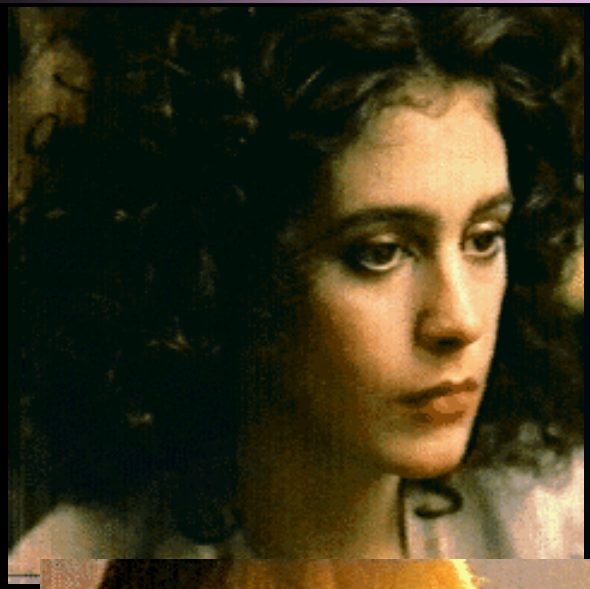
Info Bio Nano Cogno Tech Convergence – on the Forbidden Planet

Ultimate failure point – “monsters from the Id”

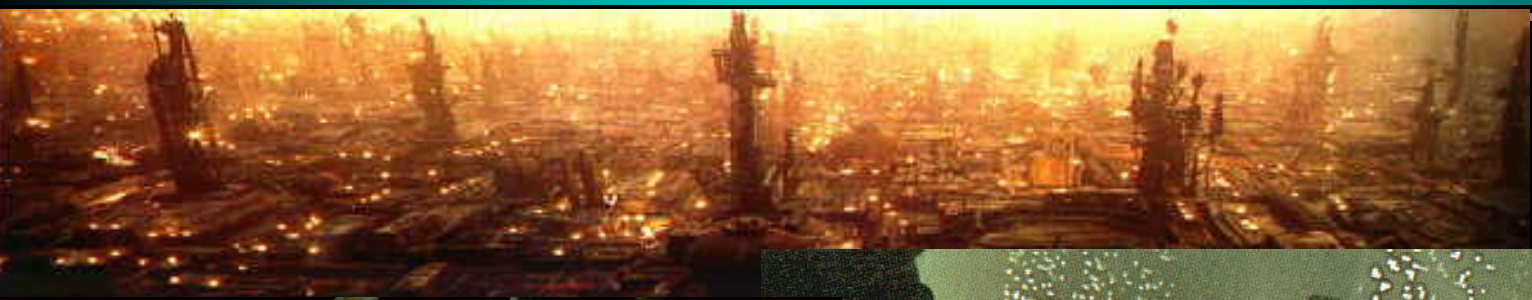
Evolutionary Morphology in the Media
Info Bio Nano Cogno Convergence

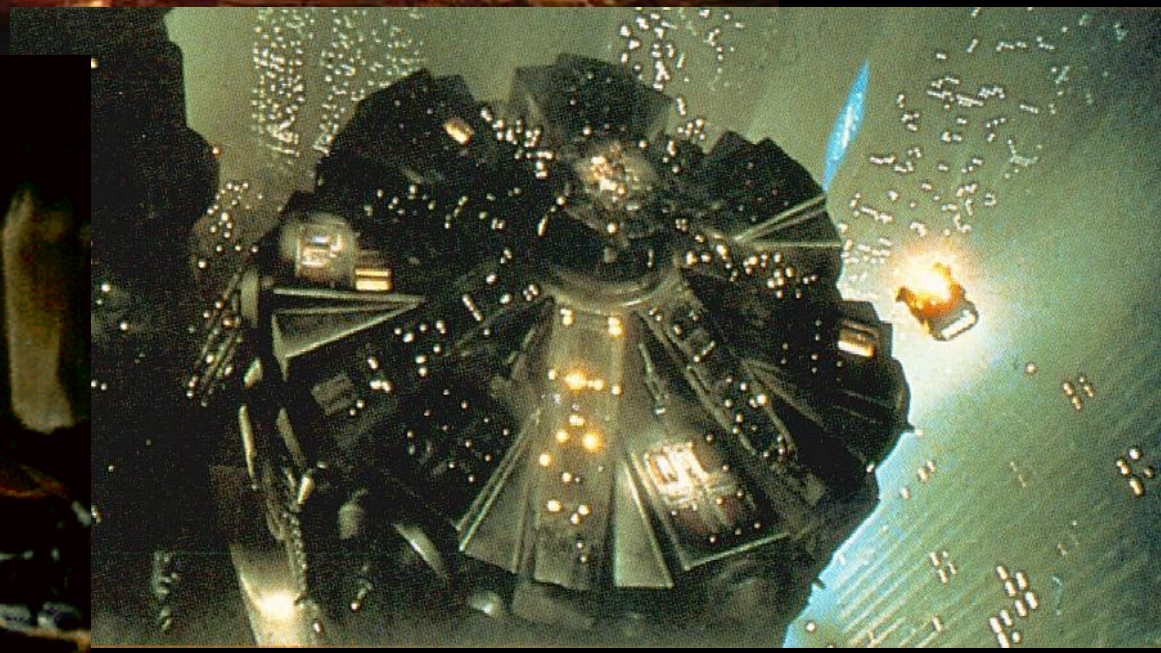


Evolutionary Morphology in the Media
Info Bio Nano Cogno Convergence

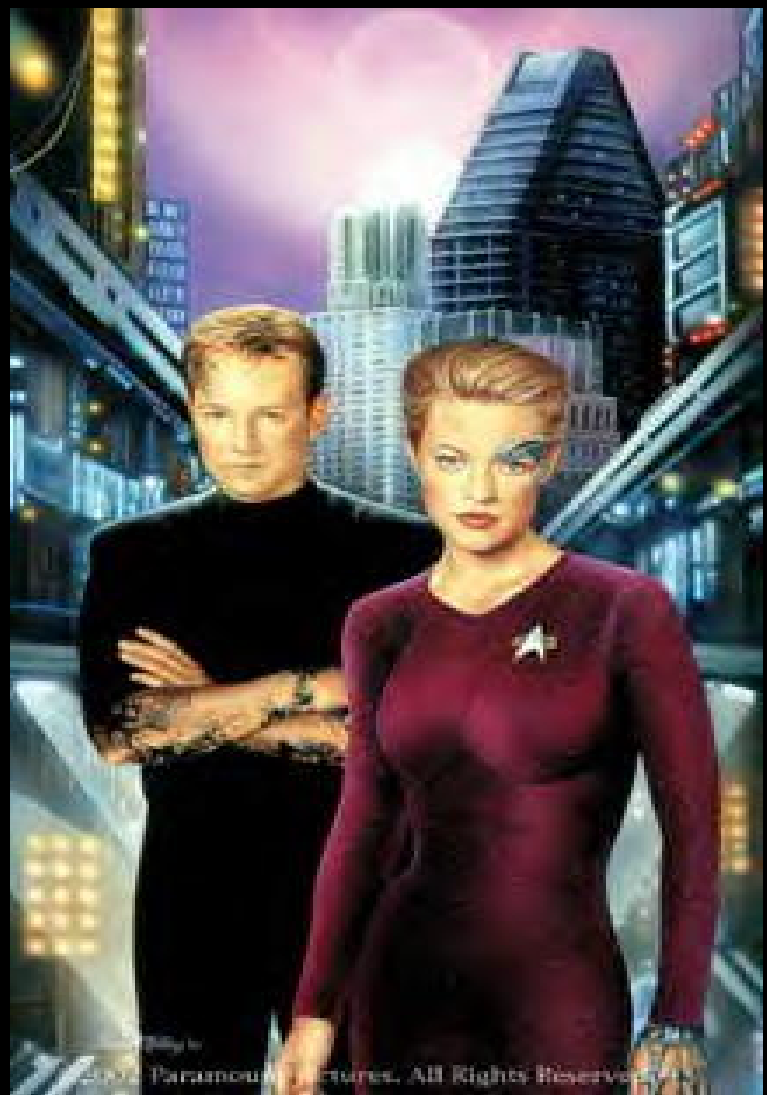


Evolutionary Morphology in the Media
Info Bio Nano Cogno Convergence





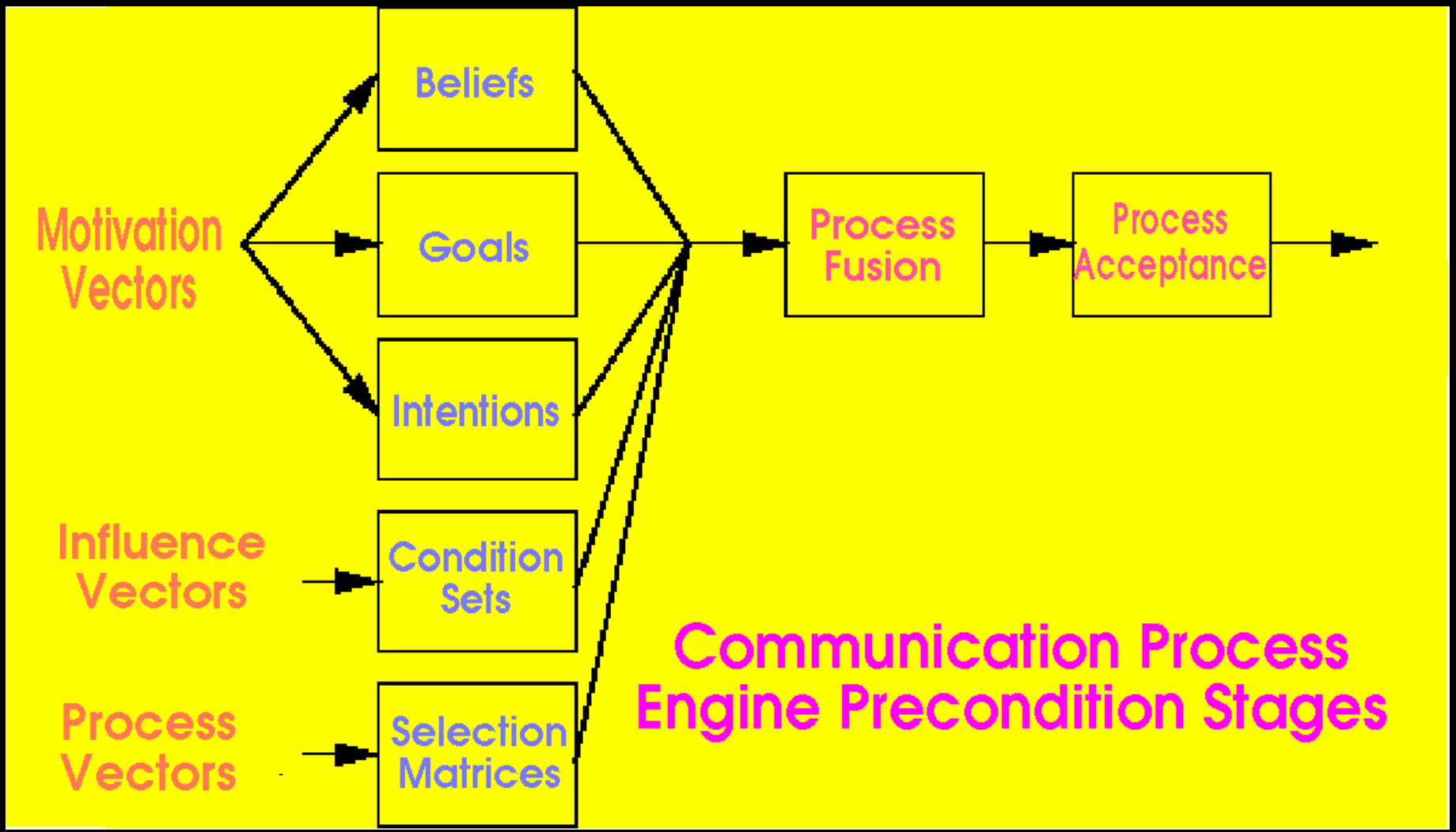
Evolutionary Morphology in the Media Info Bio Nano Cogno Convergence



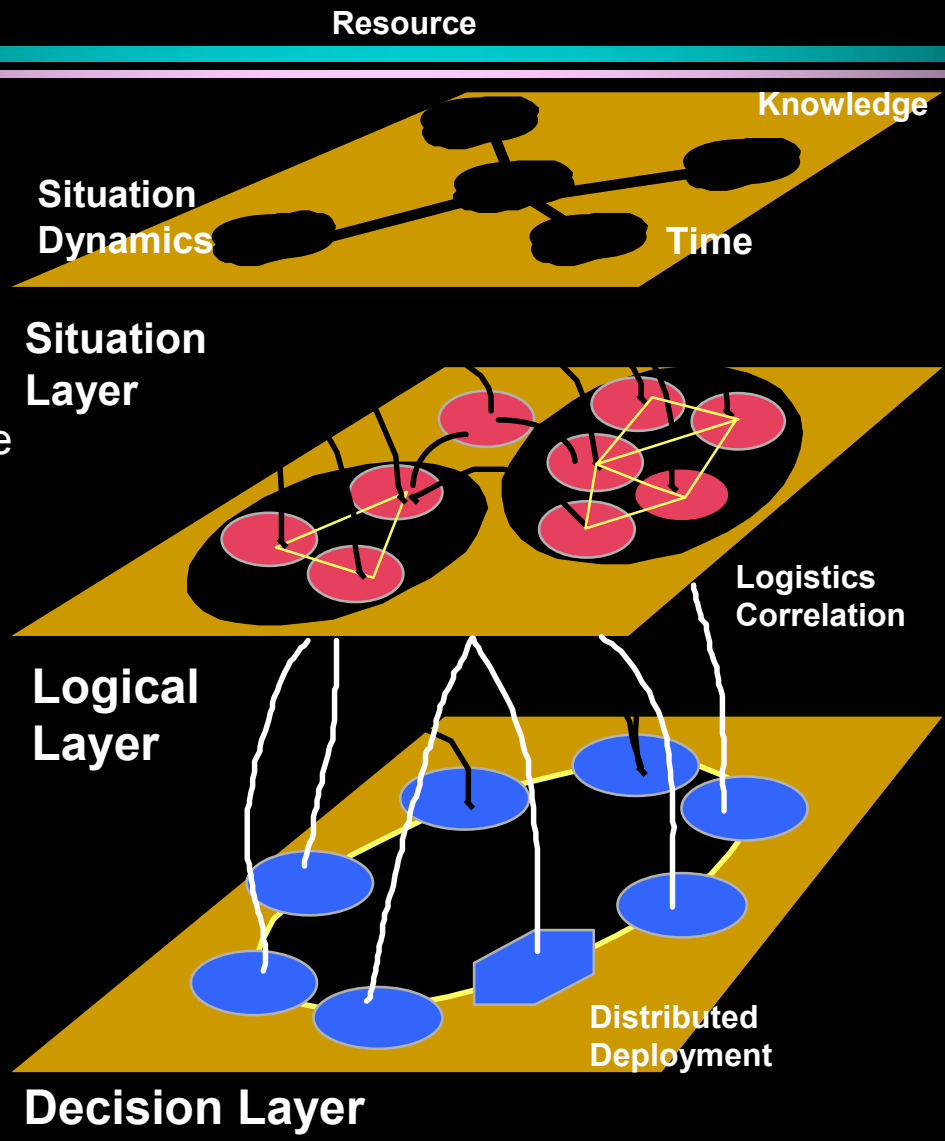
Contextual Cognition in the Emergent Operational Ecology >

Hyperdimensional Existence Navigation

Artificially Enhanced Complexity Management - Process Control



Autonomous Enhancement Enabled Decision Rendering Process Map



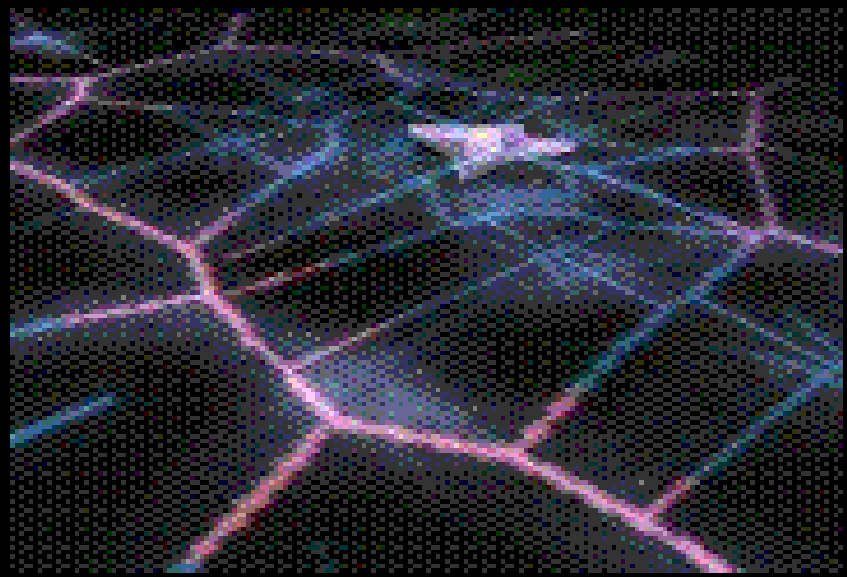
IT Resources & Infrastructure
- Data / Knowledge Services
- Process Integration
- Workflow Management

FUNCTIONAL MAP - Conceptual partitioning of functional domains

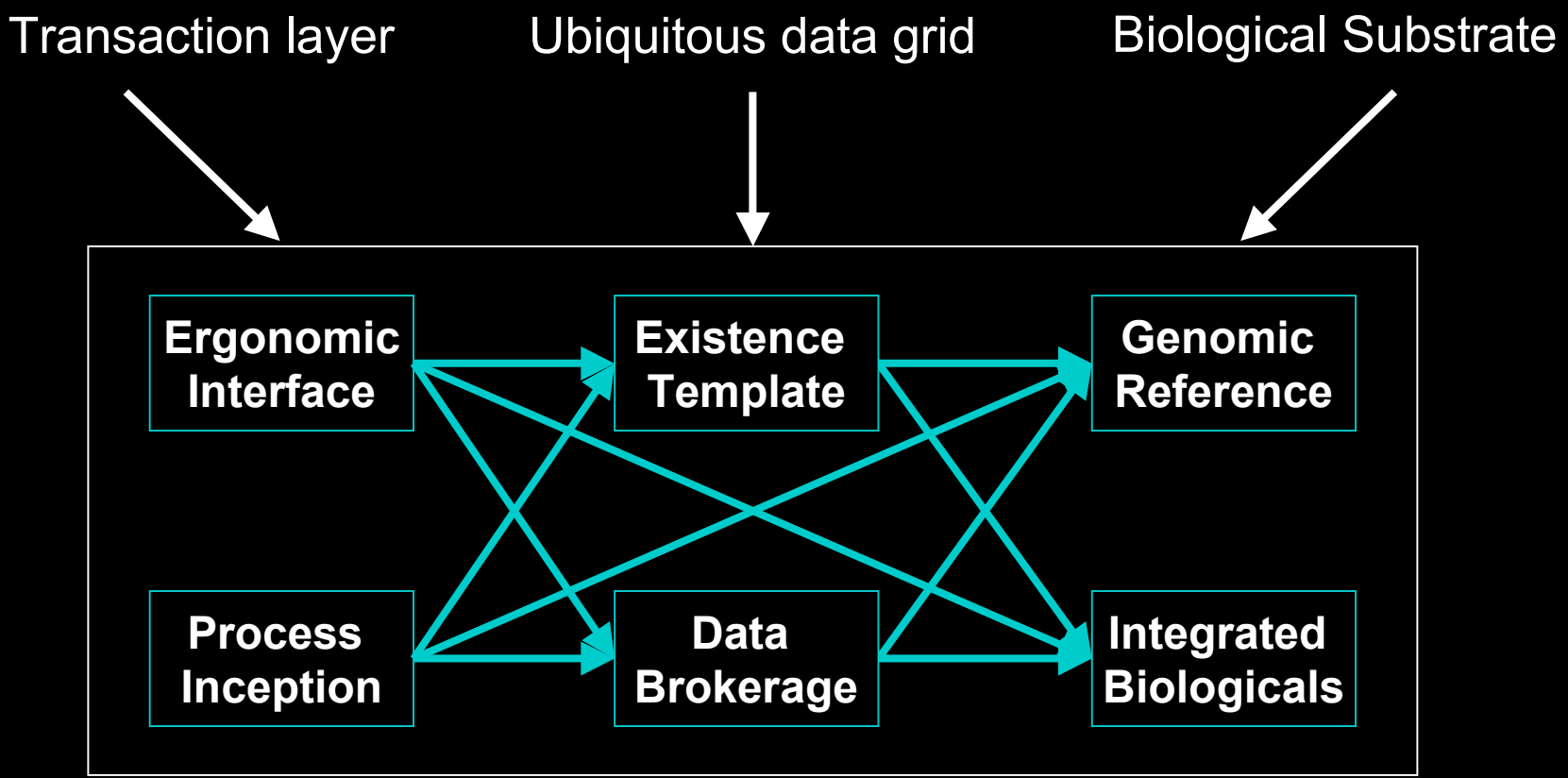
LOGICAL MAP - Functional partitions are separated into localized “process domains”

DEPLOYMENT MAP - Process domains are mapped onto distributed deployment sectors.

The Ubiquitous Synthetic Sentience Process Manifold

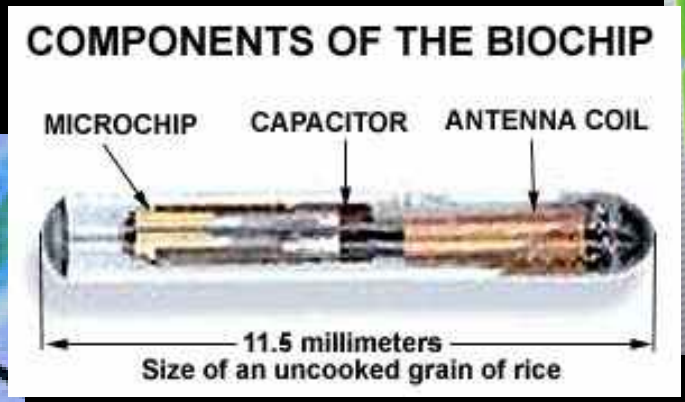


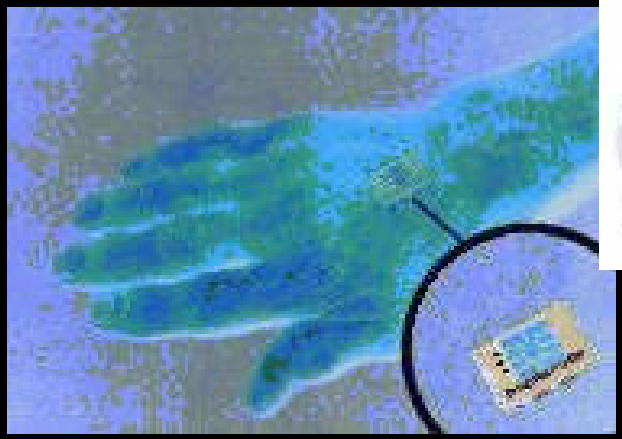
Existence Valuation System Architecture



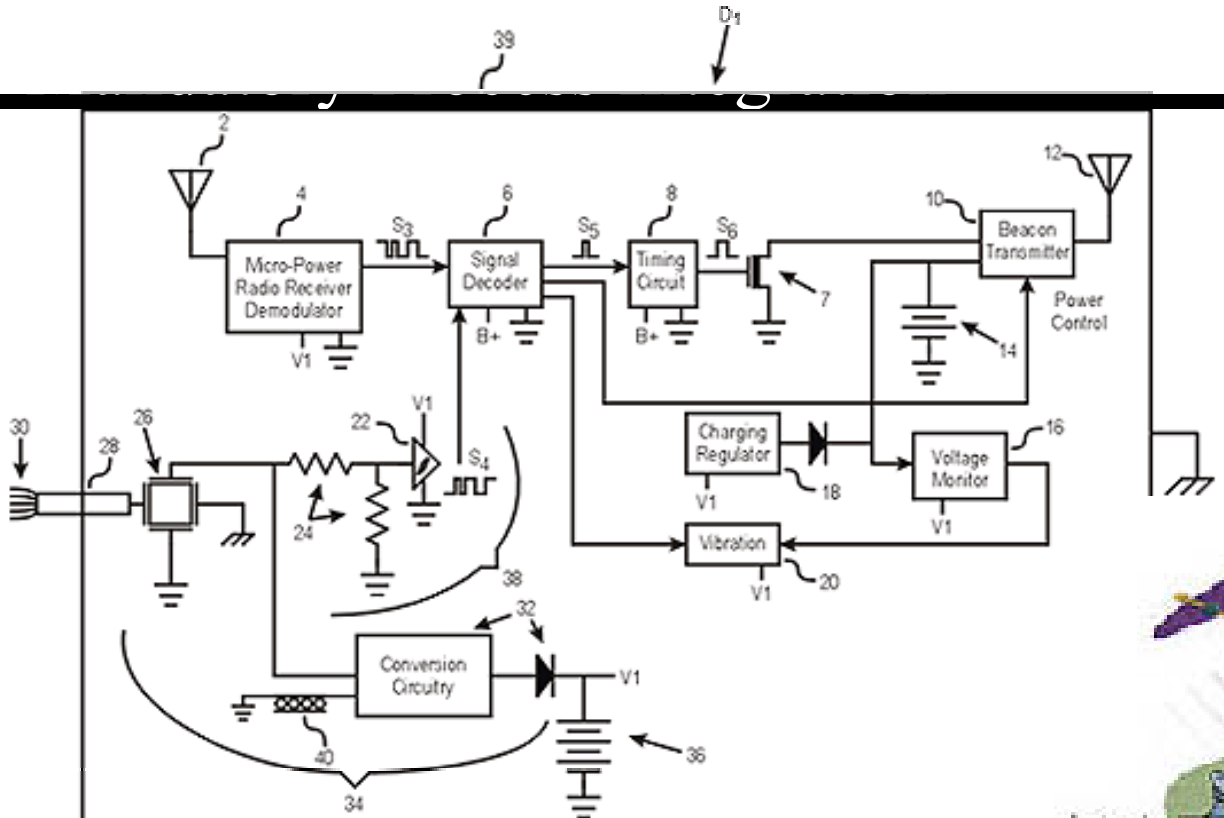
Ubiquitous Existence Monitoring

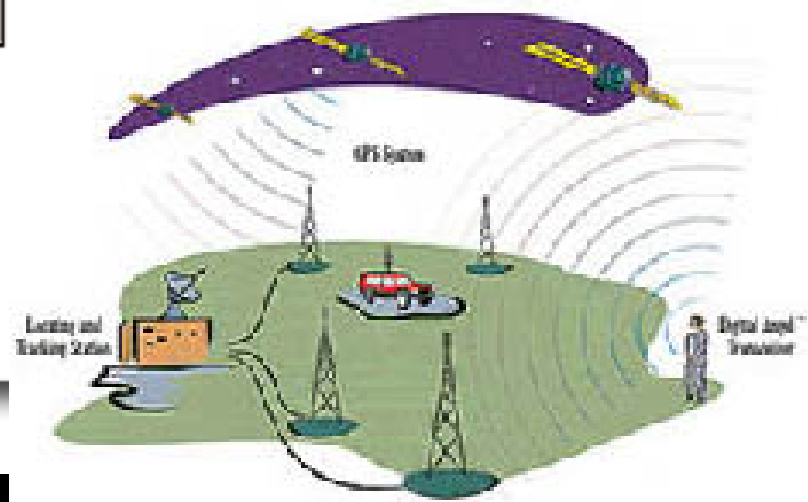
- Transition from exobiometrics
- Mandatory Process Integration





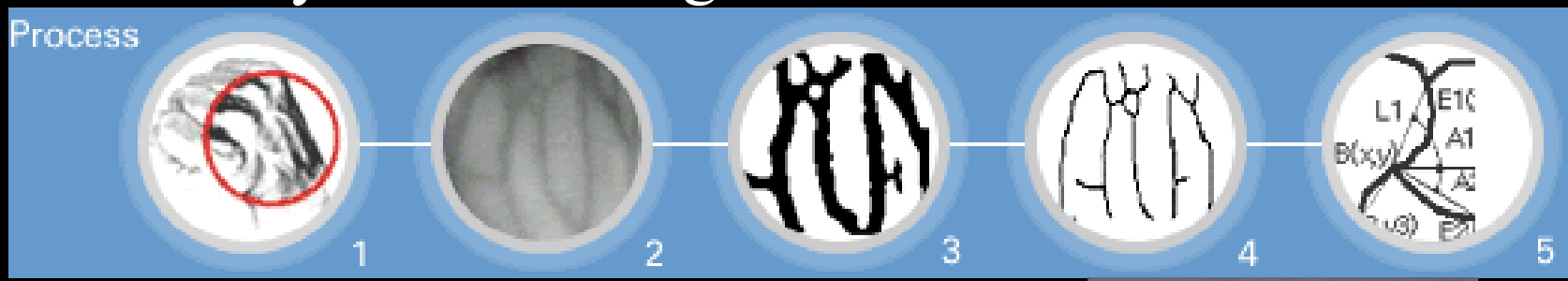
Ubiquitous Existence Monitoring





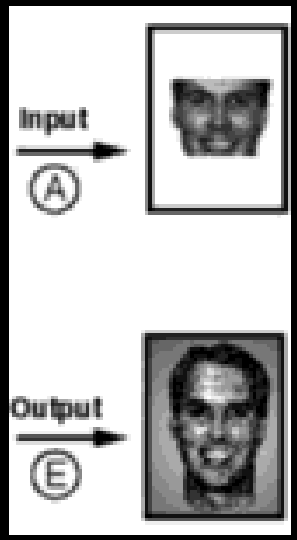
Presence Acquisition and Acknowledgement

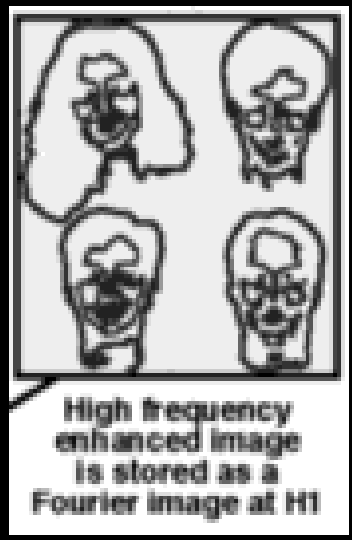
- Transition from exobiometrics
- Mandatory Process Integration

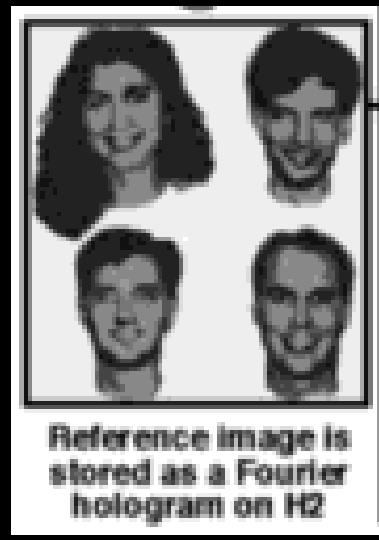


Content Addressable Feature Recognition

- Fourier / Holographic
- Wavelette
- Fractal

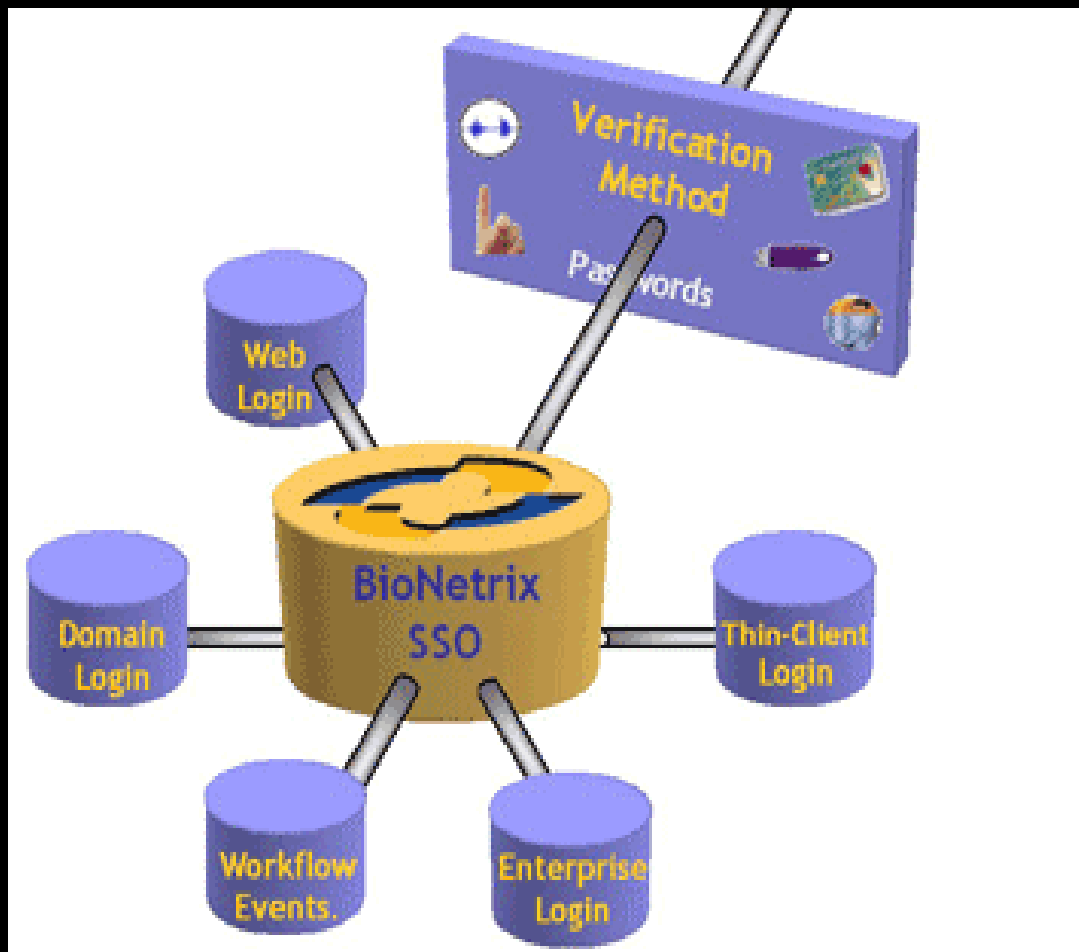






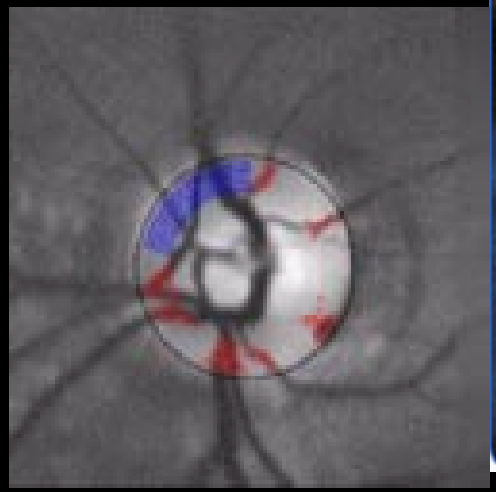
Biometric Process Management

- Process Transceiving portal
- Presence Acknowledgement
- Process Access / Distribution
- Definable Boundary Porosity
- Sovereign Knowledge Domains
- Scalable POT (Point of Transaction) Performance Metrics



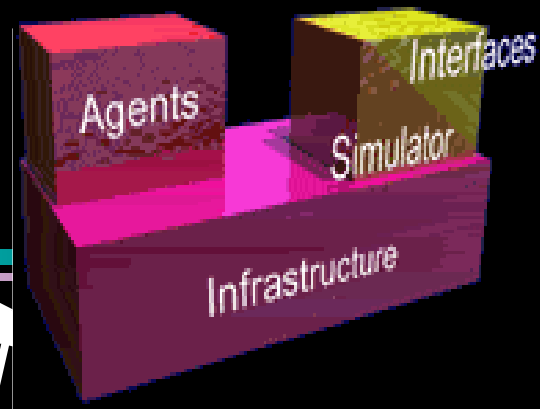
Ubiquitous Access Portals

- Biometric Transaction Coupling
- Optional Process Integration
- User Transparency



“Virtual Human” Entity Interface

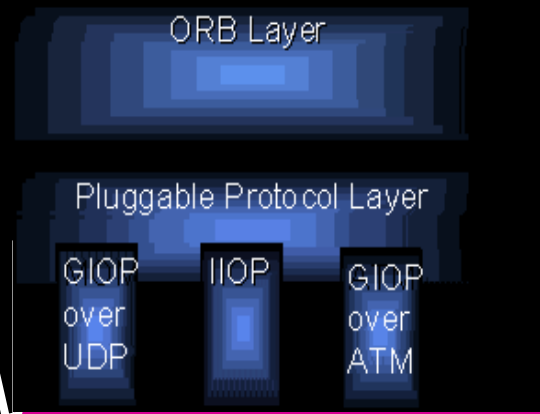
Ubiquitous Access Portals



Intelligent Agent Hierarchies

Smart Sensors Everywhere

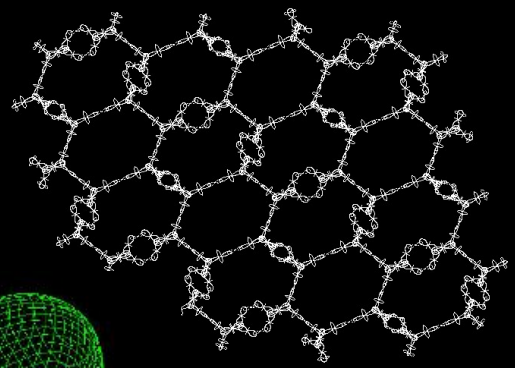
Digital Process Convergence

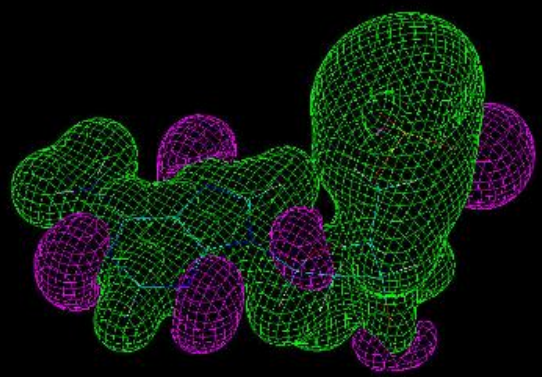


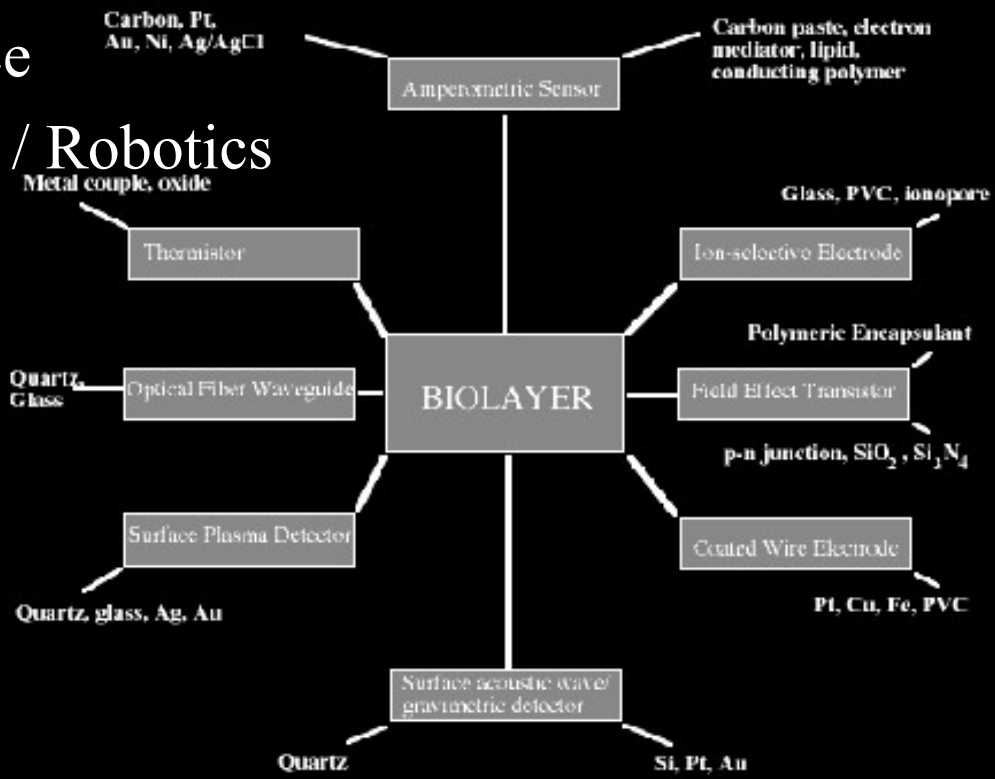
Process Brokeraging Architectures

Major Development Domains of the Emergent Operational Ecology

- Nanostructured Materials – stealth, protection, intelligence, self healing systems
- Telecomm / Computing / Embedded Intelligence
- Sensors / Detectors / Surveillance
- Integrated Autonomous Devices / Robotics



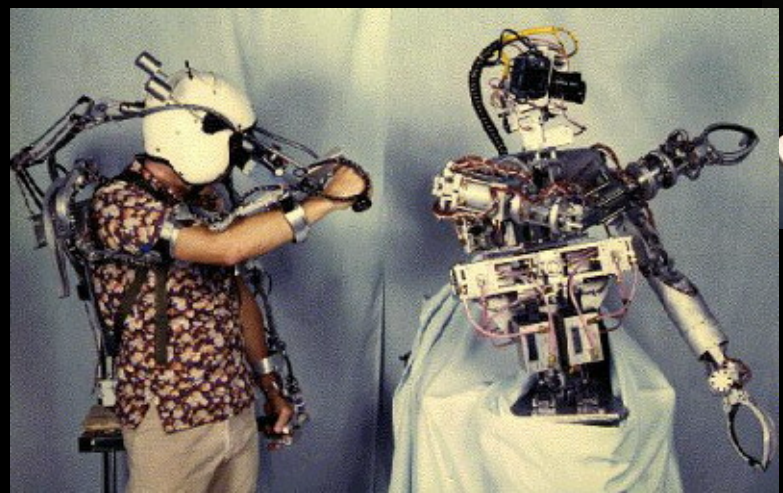


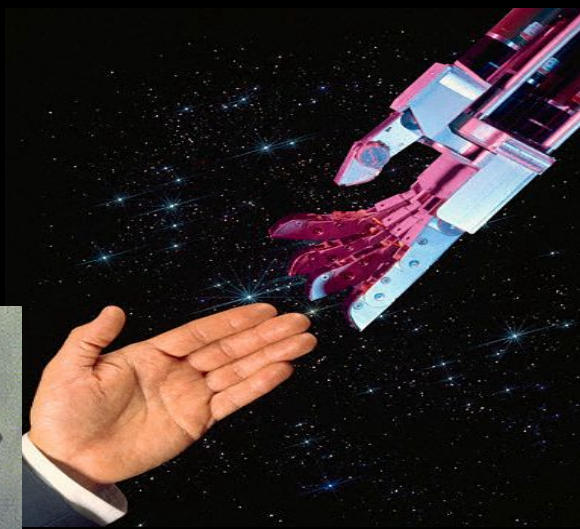


Primary Objectives:

DARPA - Defense Advanced Research Projects Agency

- Keep human soldiers from harm
- Enhance human capacity, assisted enhancement
- Emphasis on “smart” technology instead of “replacement” technology

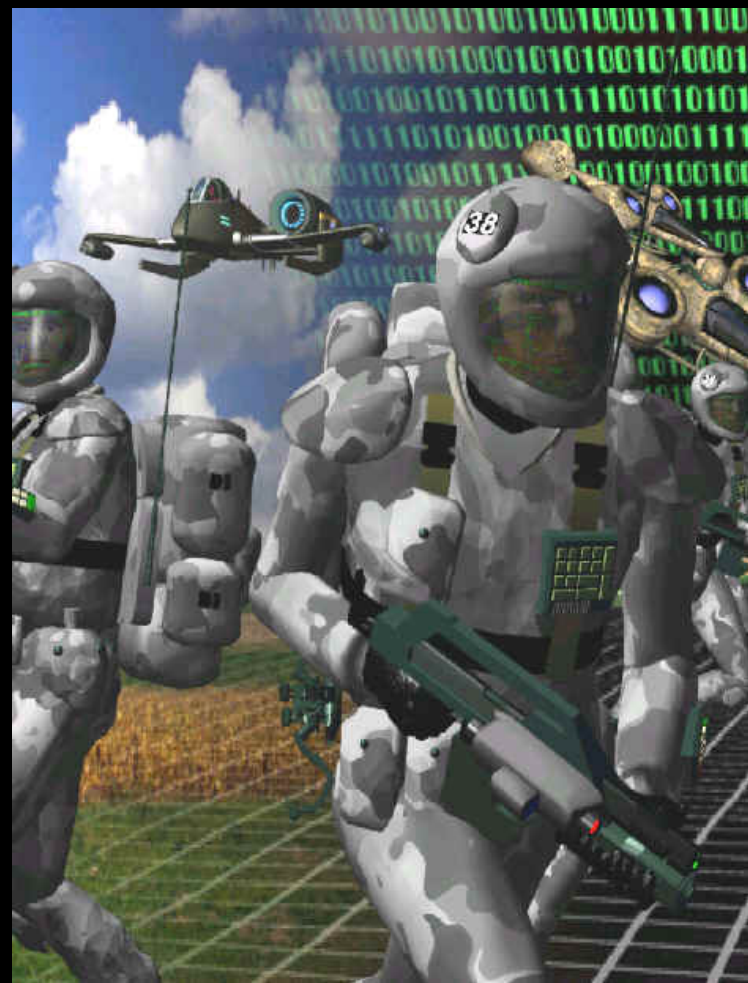




Soldier of the Future – Define "Soldier"

- ***Institute for Soldier Nanotechnologies***

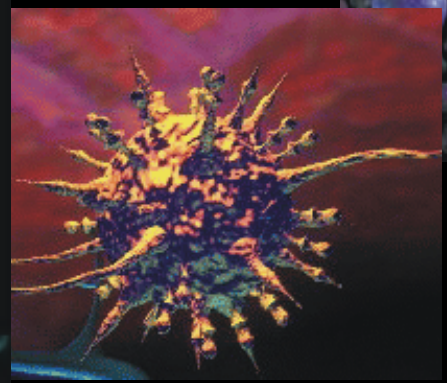
http://www.aro.army.mil/soldiernano/

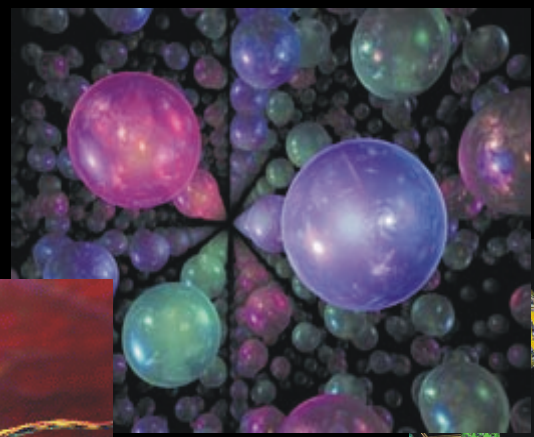


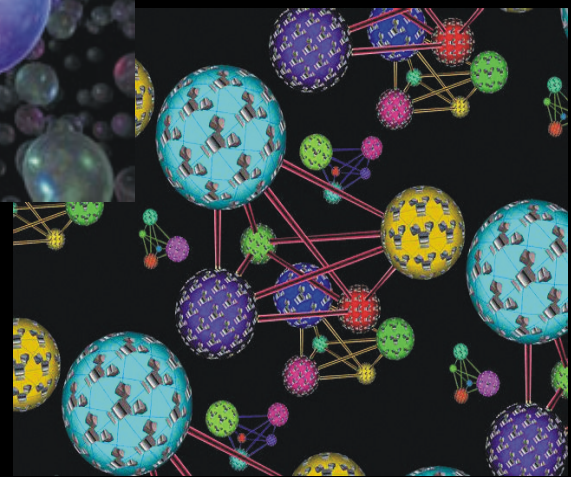
NBIC Convergence

Future arenas of Advanced Materials, Integrated Systems, Adaptive Process Morphology

- Micro-nano satellite “colonies”, autonomous vehicles, intelligent swarms
- “Smart” autonomous robots, distributed sensors, intelligences, artificial entities
- Integration of humans and autonomous intelligences
- Self healing / adaptive adaptive materials, systems, networks
- Anticipatory response to hyper-virulent, xenomorphic nano-organisms

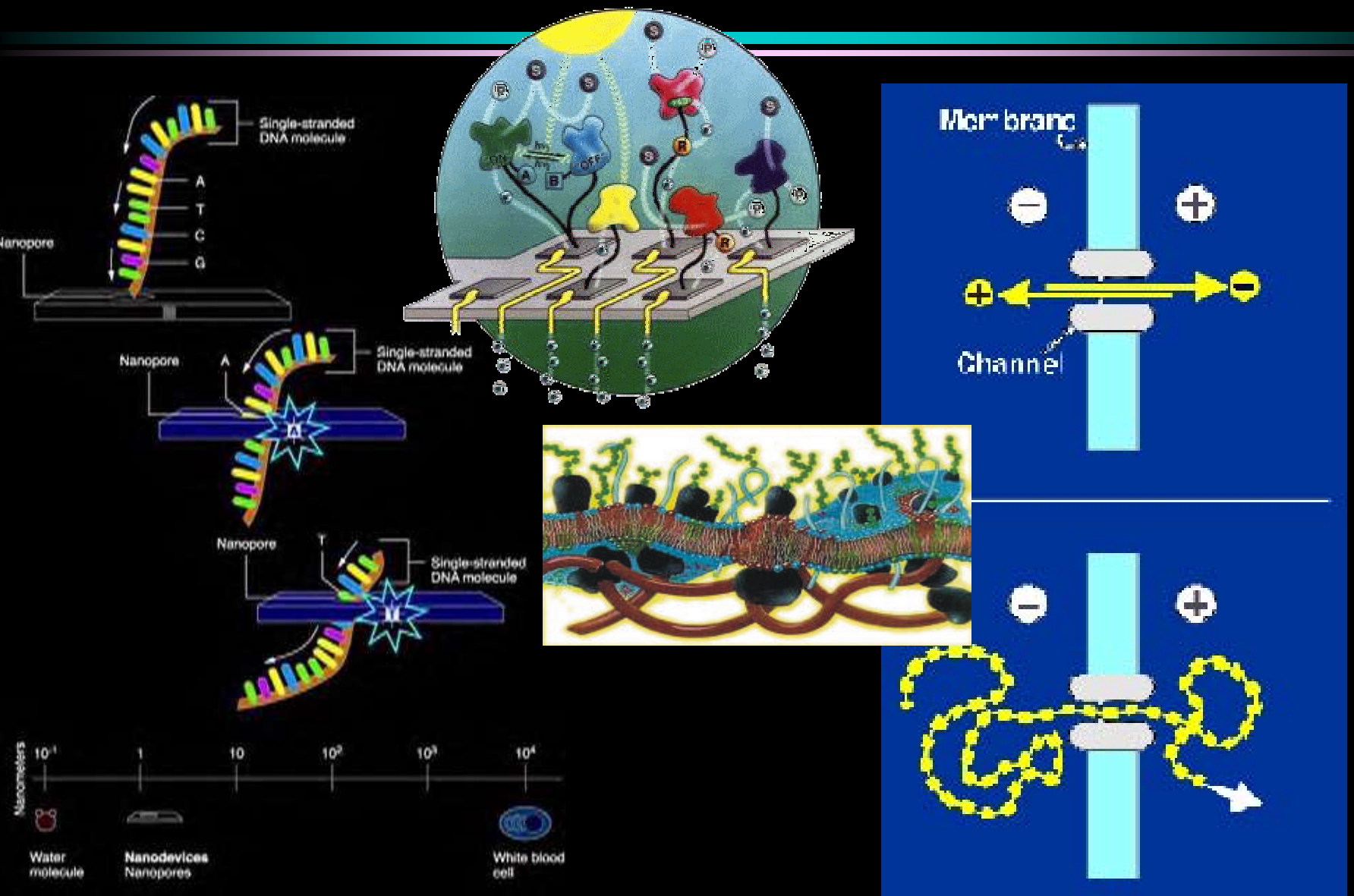






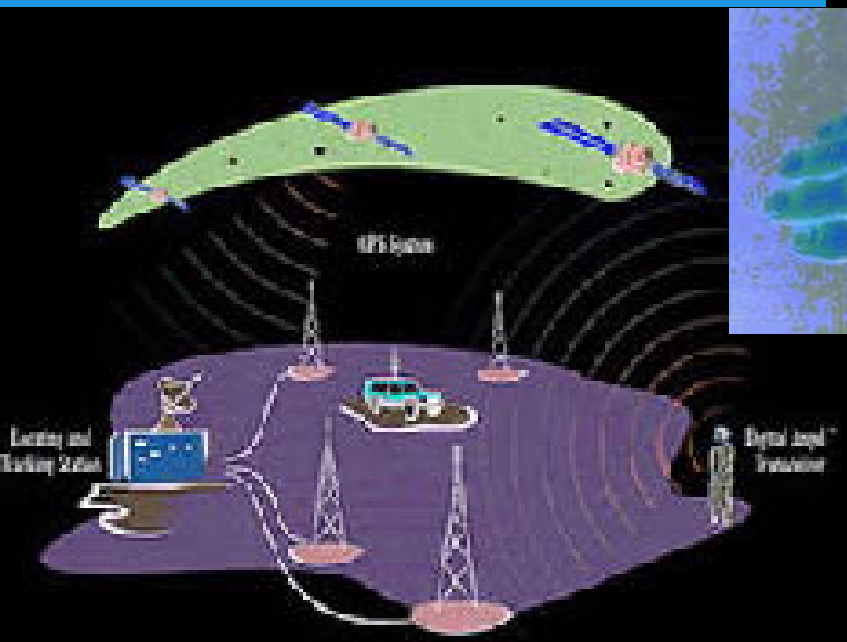
Nanoporous Materials, Selective Membranes

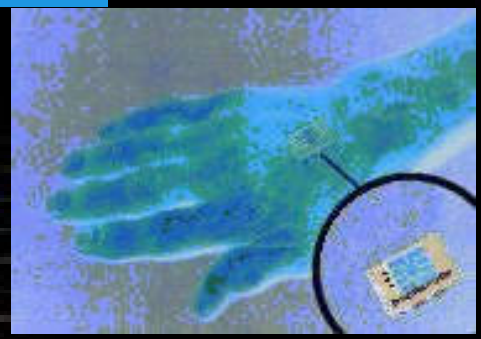
"Smart" Skin / Integrated Molecular Sensors

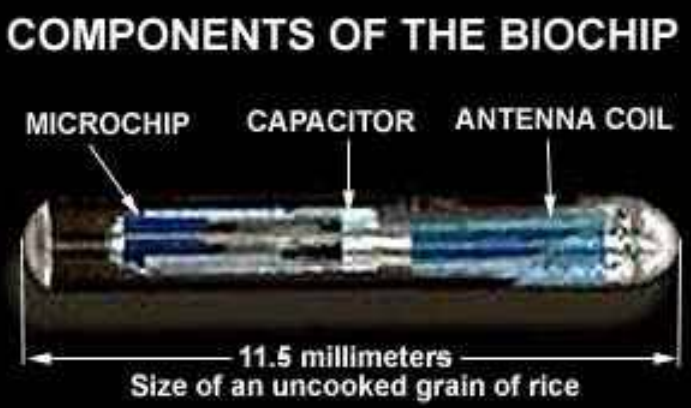


Integrated Human & "Virtual" Operational Ecologies - Future Biometric Immersion

Digital Angel™ CORPORATION



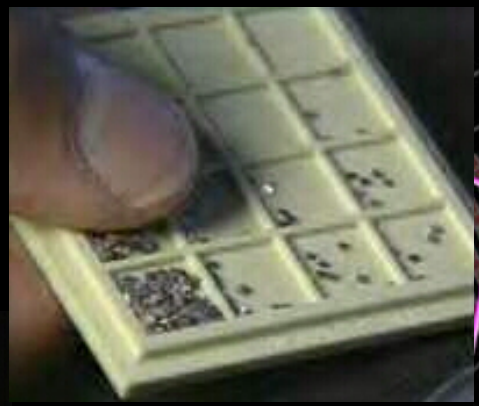


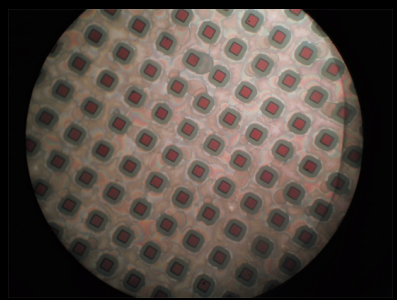


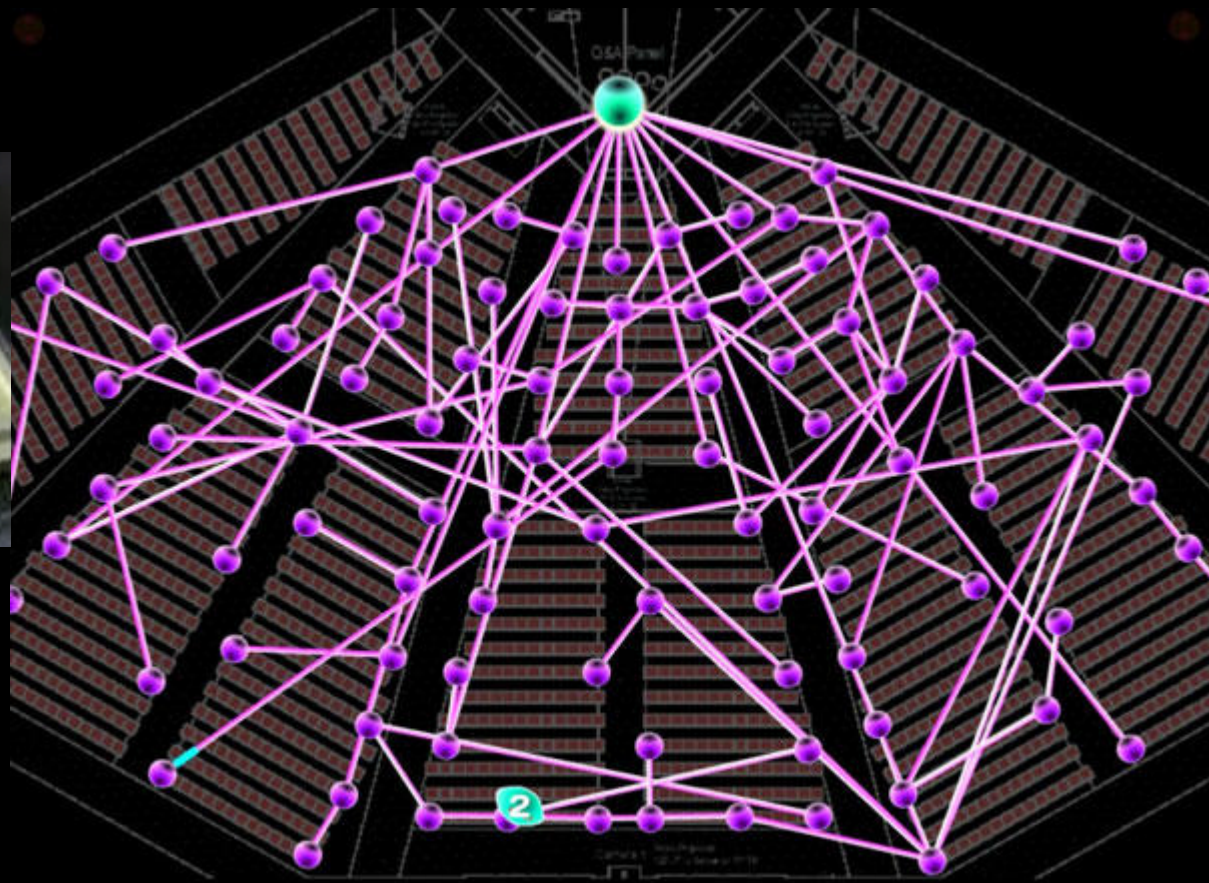
- Biochip Implants
- Distributed Sensors
- "Smart Dust"
- Molecular Sensors

“Smart Dust”
Biometric Immersion

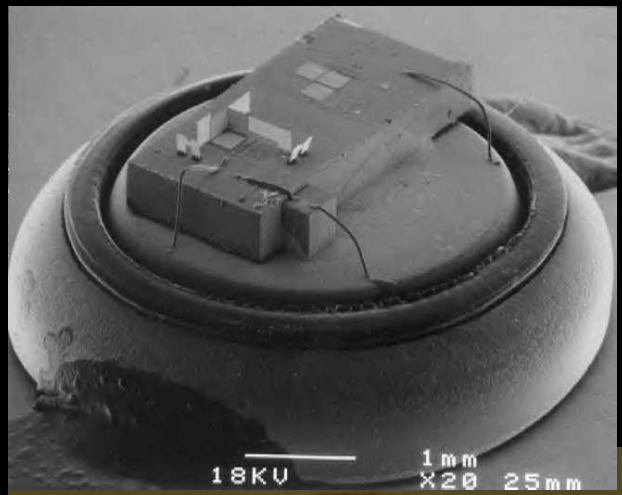
- Sensor “Swarms”

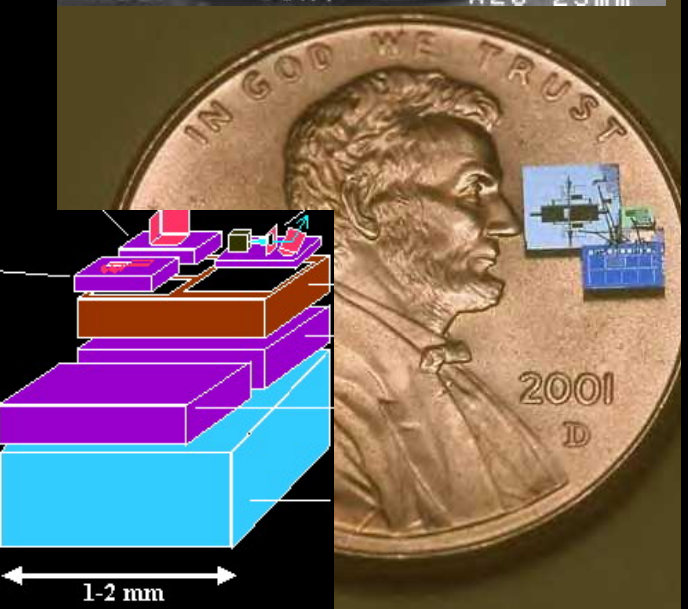




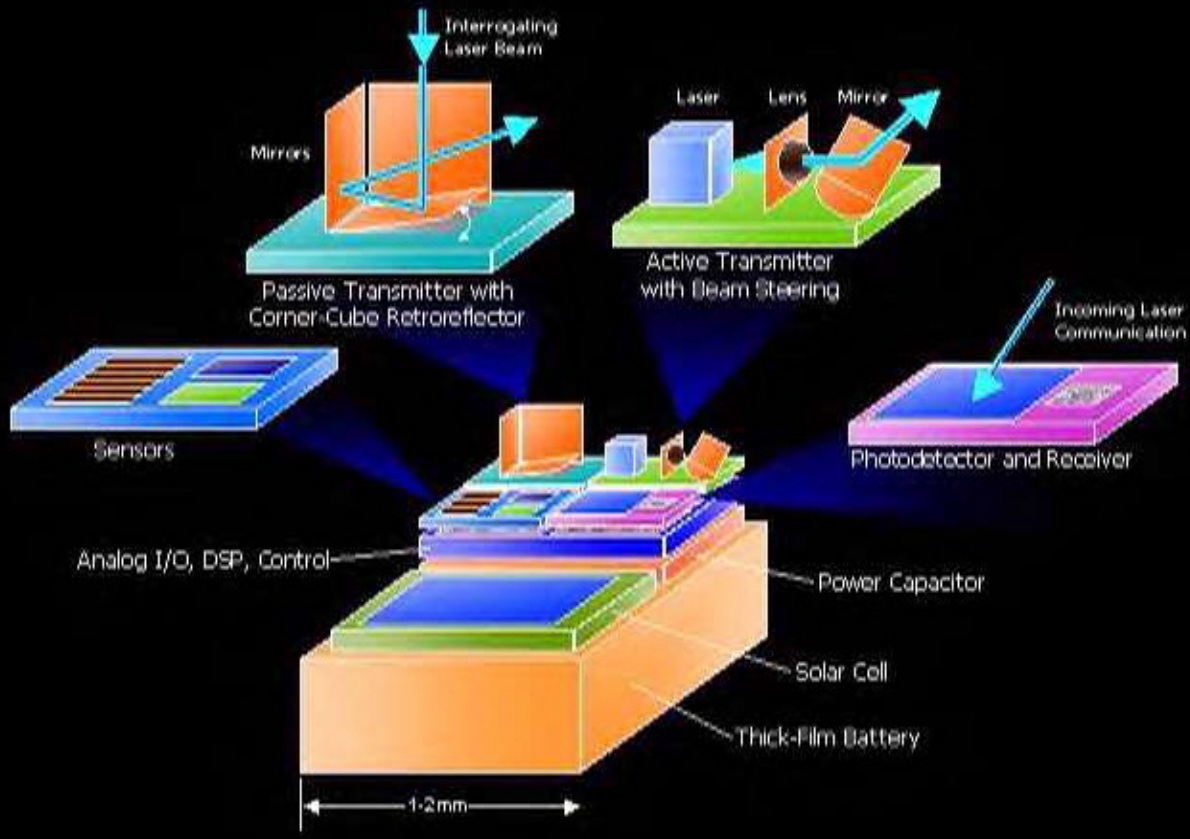


Future Biometric Immersion



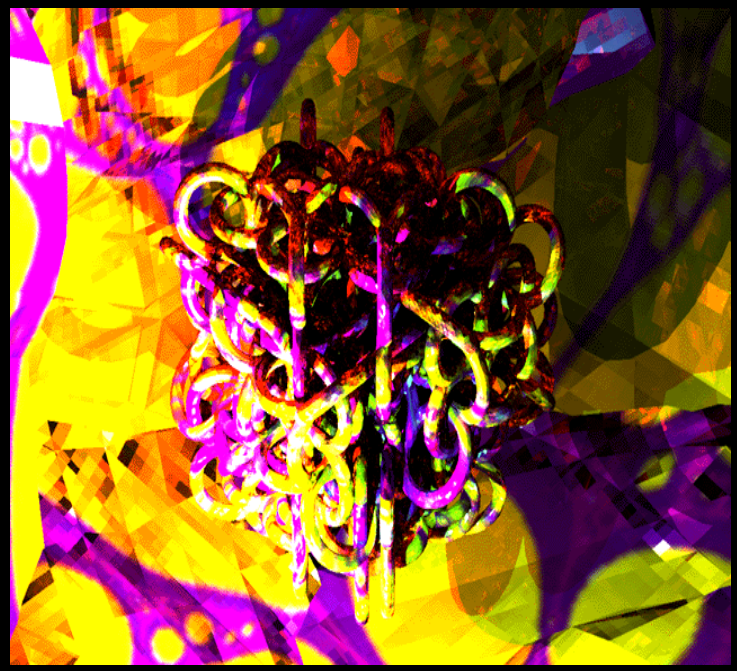


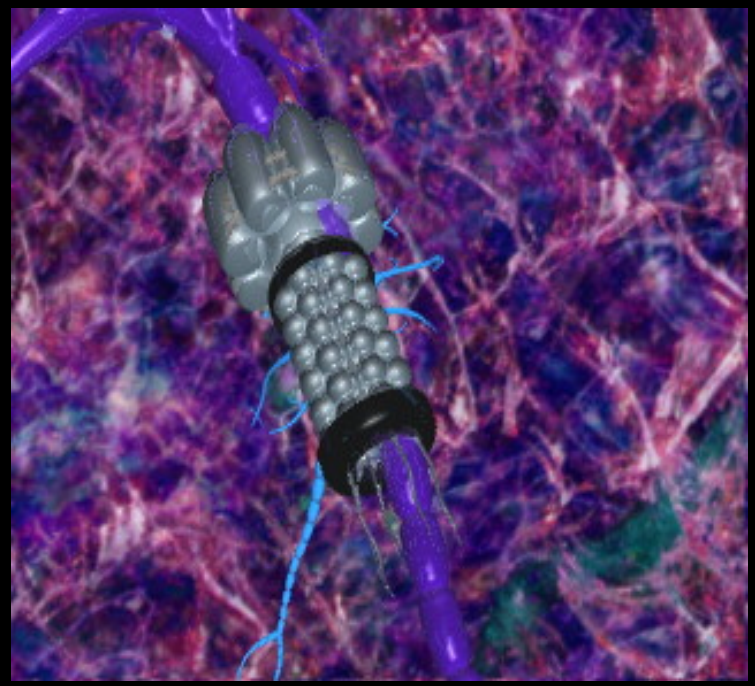
- Autonomous Distributed Entities
- Ubiquitous Presence Monitoring



Cellular Cybernetics

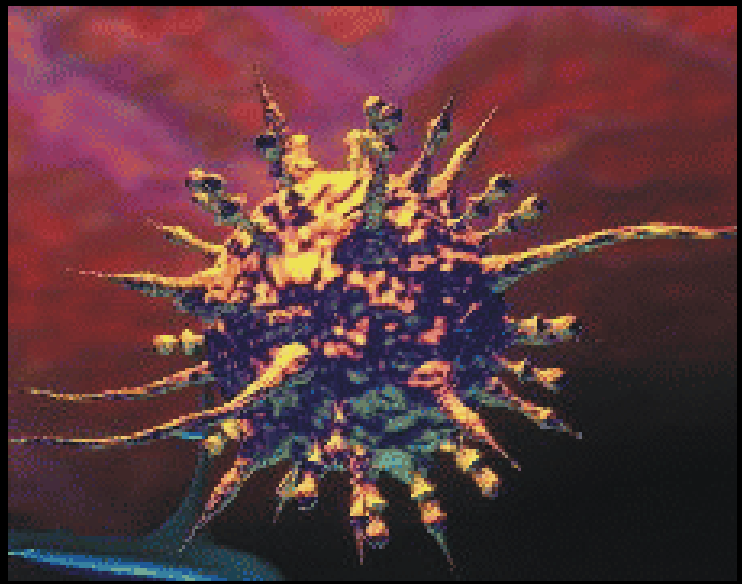
- Cellular Delivery Systems
- Enhancement / Repair Biodevices

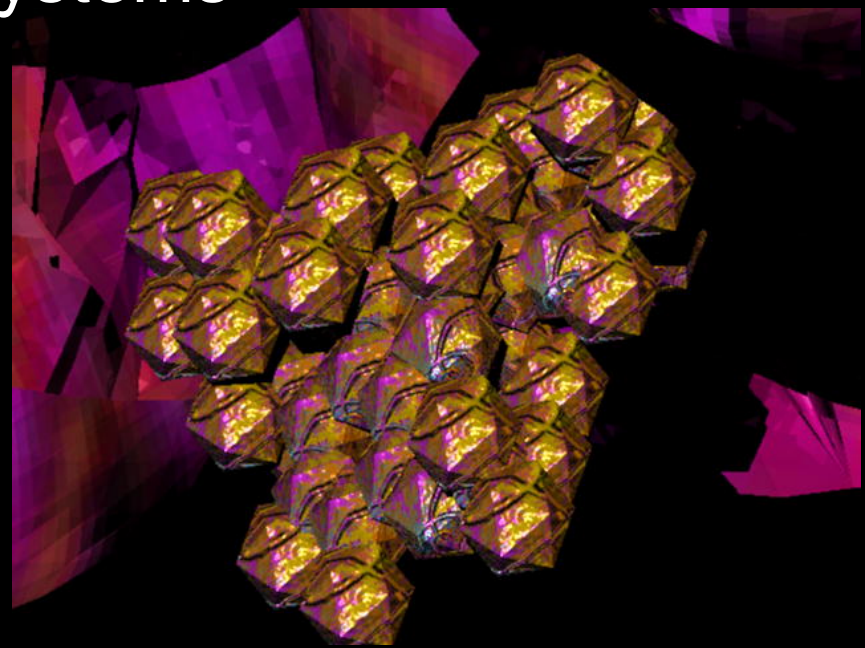


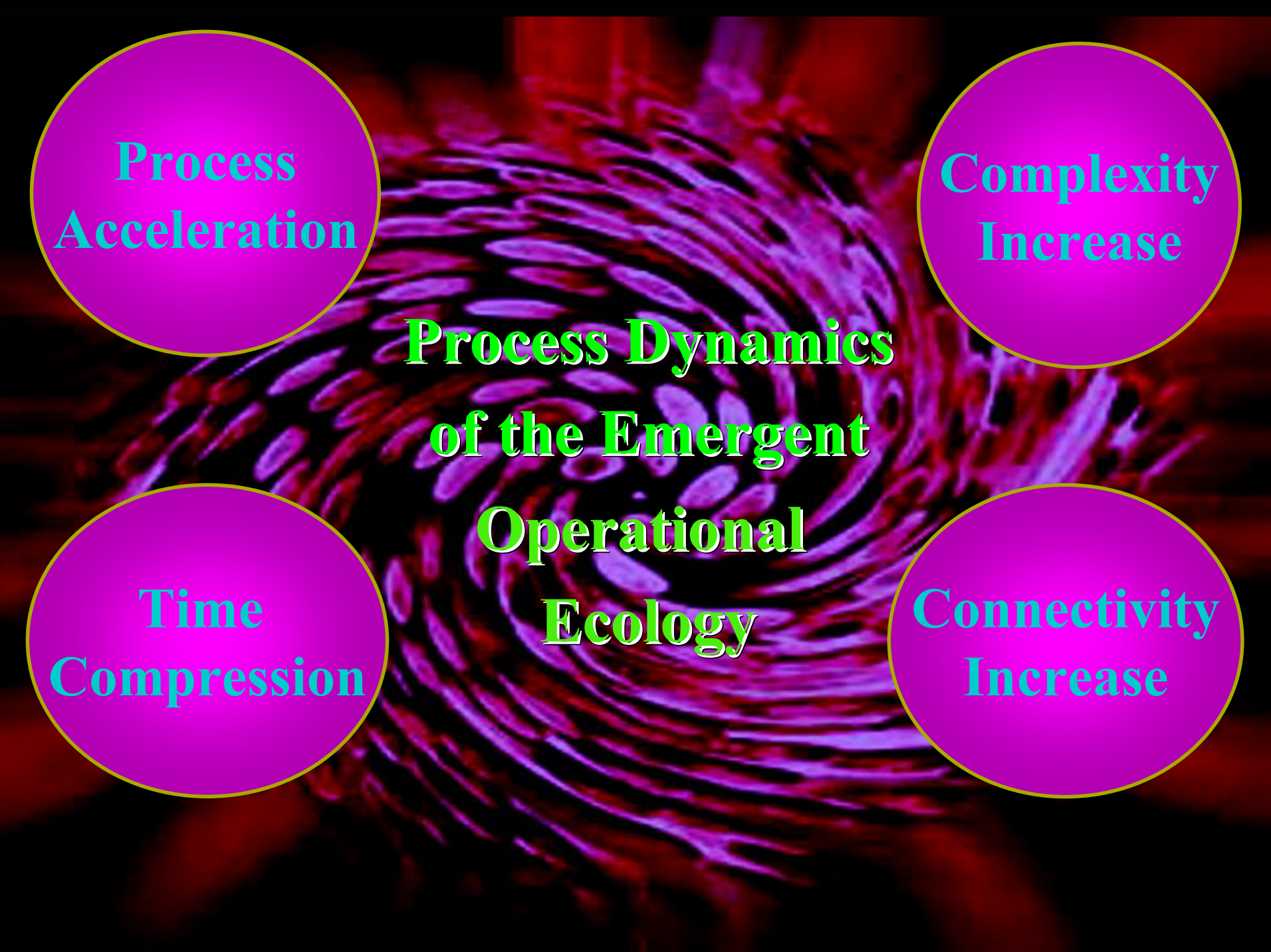


God on Demand - the Next Emergent Process Deliverable

- Hybrid Lifeforms
- Synthetic Organisms
- Integration of Living Systems



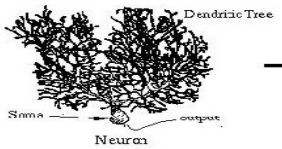



Process Acceleration
Complexity Increase
Process Dynamics of the Emergent Operational Ecology
Time Compression
Connectivity Increase

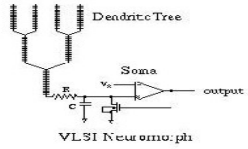
Designed Evolution

Nano Bio Info Cogno

Example Implemenation Cycle

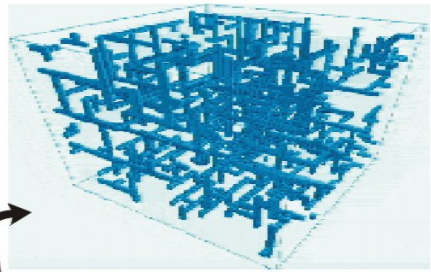


Neuron



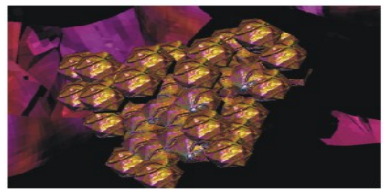
VLSI Neuromorph

Natural Neural Network Modeling



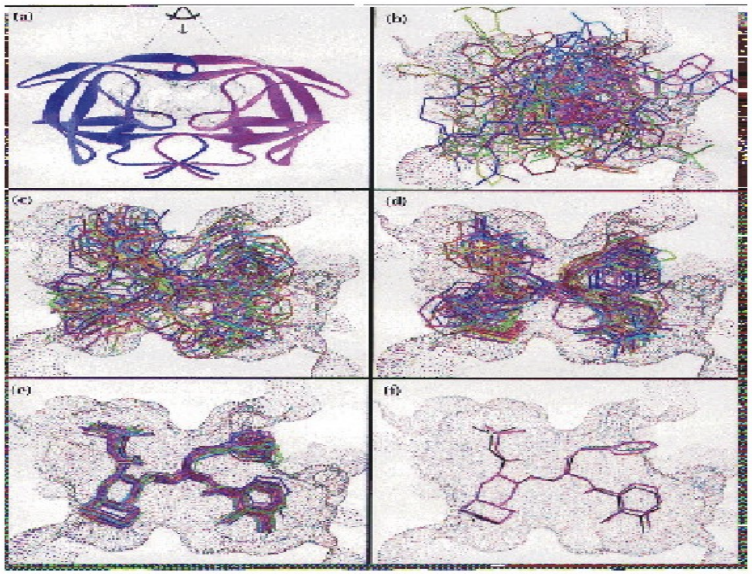
Complex Self Evolving
Neural Network Modeling

Nano
Bio



Nanobiological Neural
Network Systems

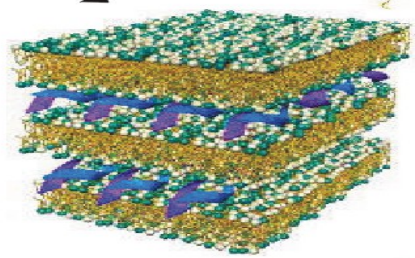
Nano
Bio
Info



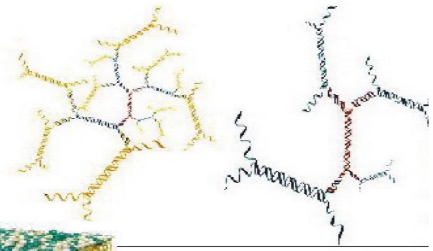
Evolutionary Proteomic Modeling / Synthesis

Co-Evolved Hybrid Human
Organism / Intelligence

Cogno
Nano
Bio

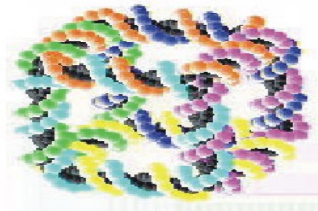


Complex Proteomic / DNA
Computing Systems



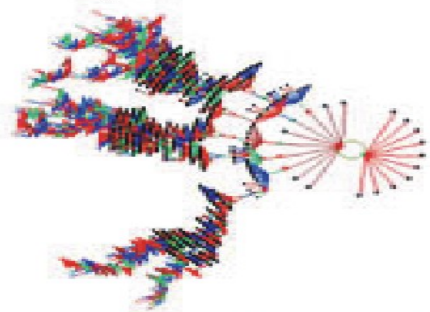
Hybridized
Synthetic DNA

Nano
Bio
Info



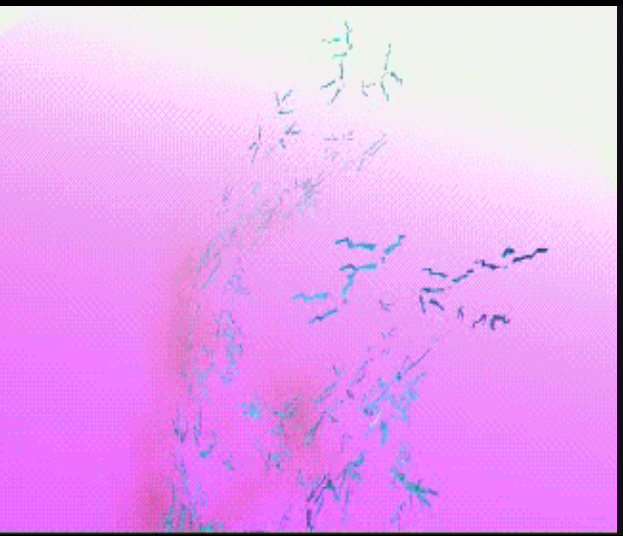
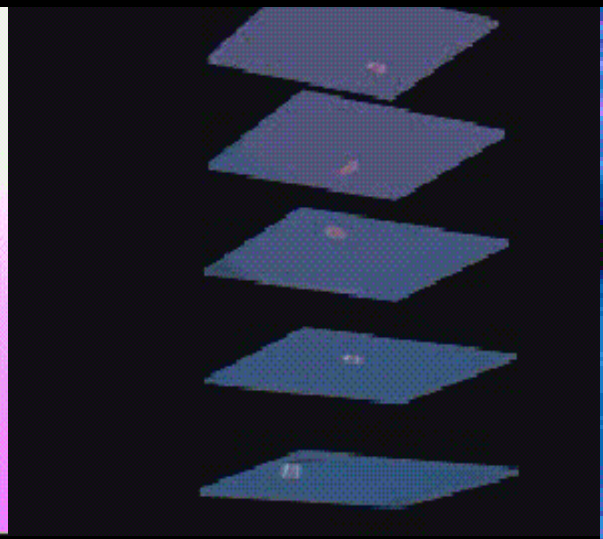
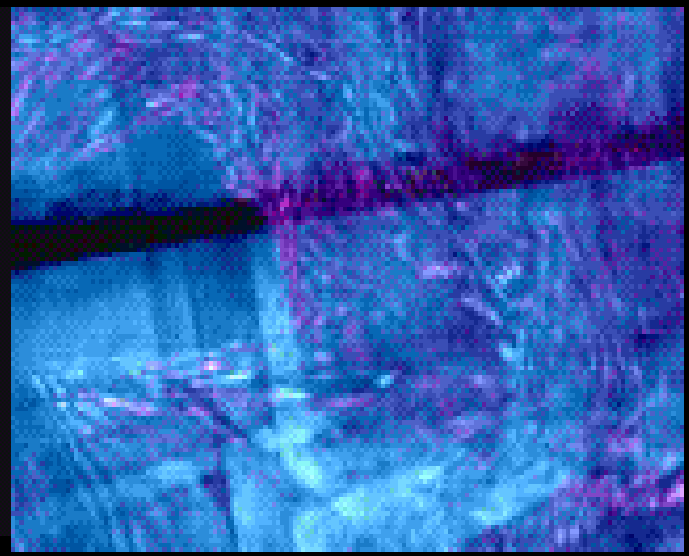
Structural Proteomics
DNA "circuits" & devices

Nano
Bio
Info



Metascale Genomic Modelling / Engineering

Nano
Bio
Info

Convergence Outcome - Existence is Redefined

- Merging of the Virtual and the Real, Organic and the Synthetic
- Immersion into the Ubiquitous Fabric
- Life Itself is being Redefined