Biometric Immersion into the Ubiquitous Data Grid – The Next Evolutionary Increment

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4/23/2010

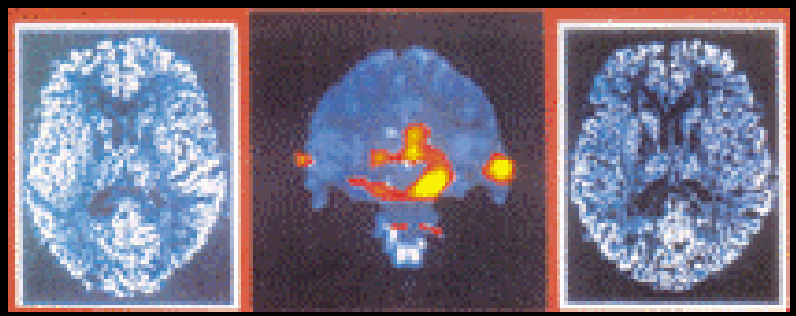
NANOSIG

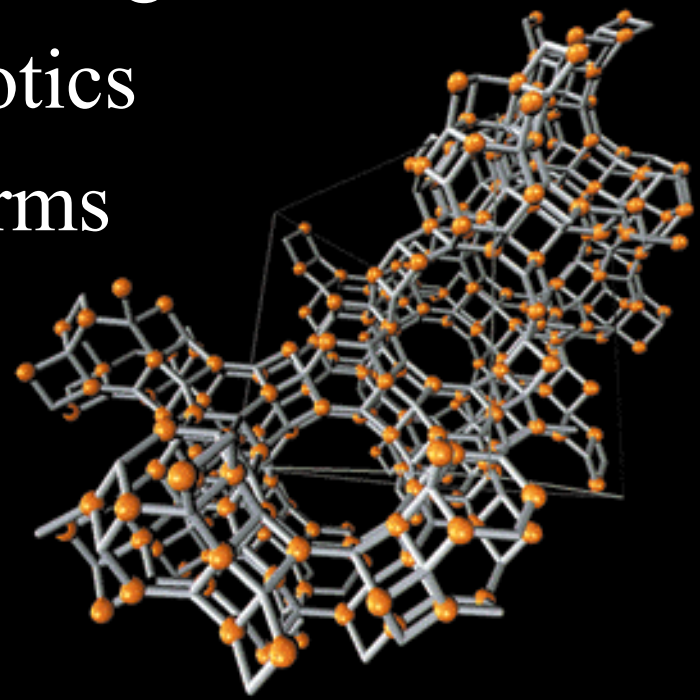
THE STRATEGIC SYNERGY GROUP

INSTITUTE FOR GLOBAL FUTURES

Approaching the next Evolutionary Eventhorizon

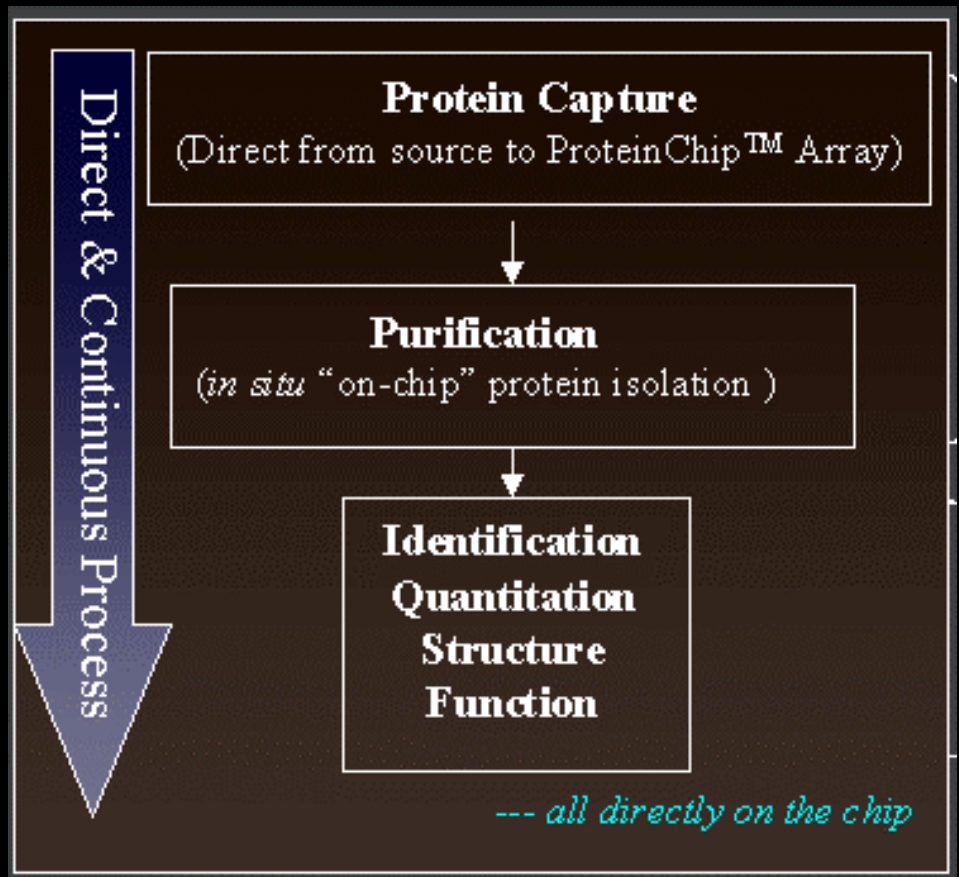
- Behavioral Biometrics
- Ubiquitous existence monitoring
- Distributed Sensing & Robotics
- Integrated Cognition Platforms





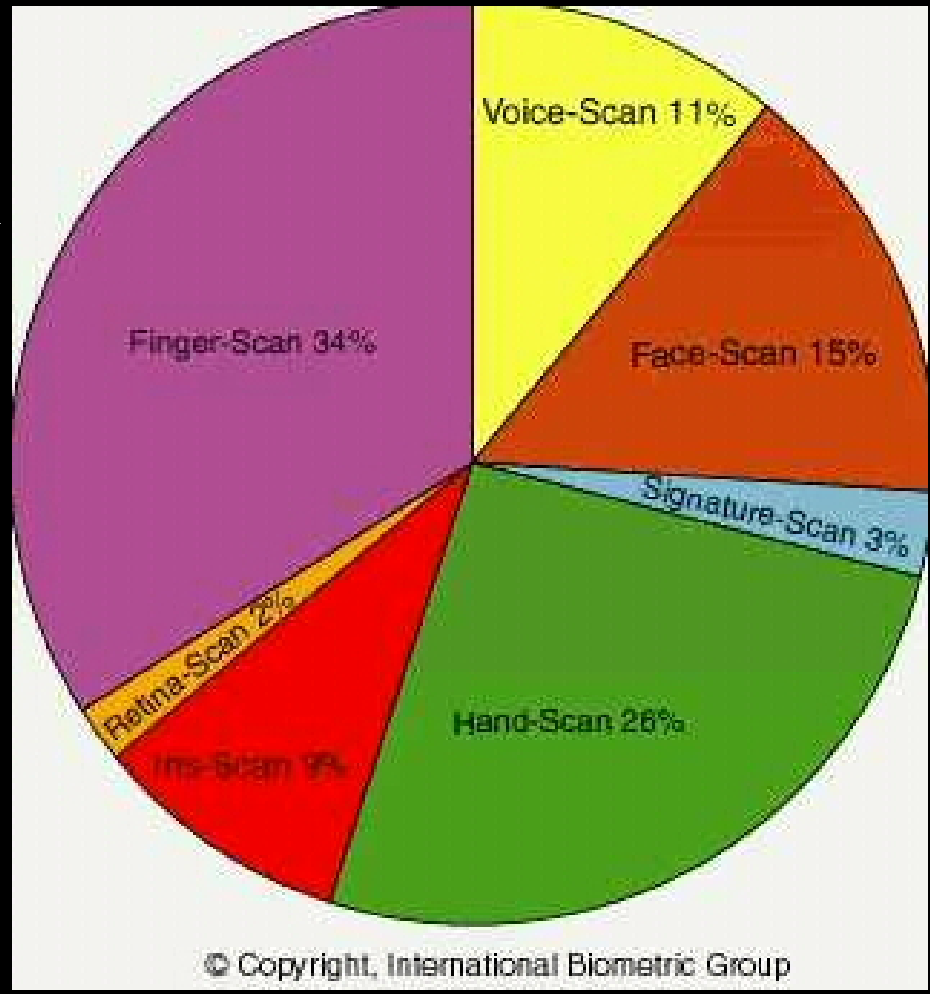
Merging of the real and virtual, biological and synthetic, into a ubiquitous existence continuum

- Technology Convergence
- Economic Drivers
- Belief Systems

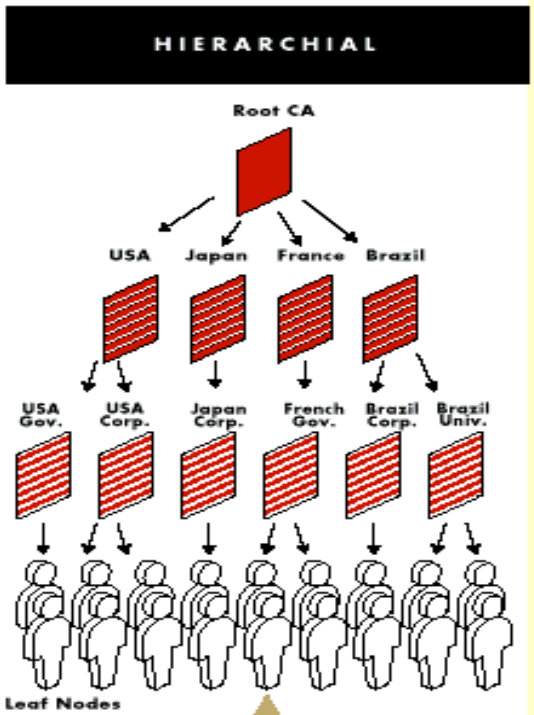


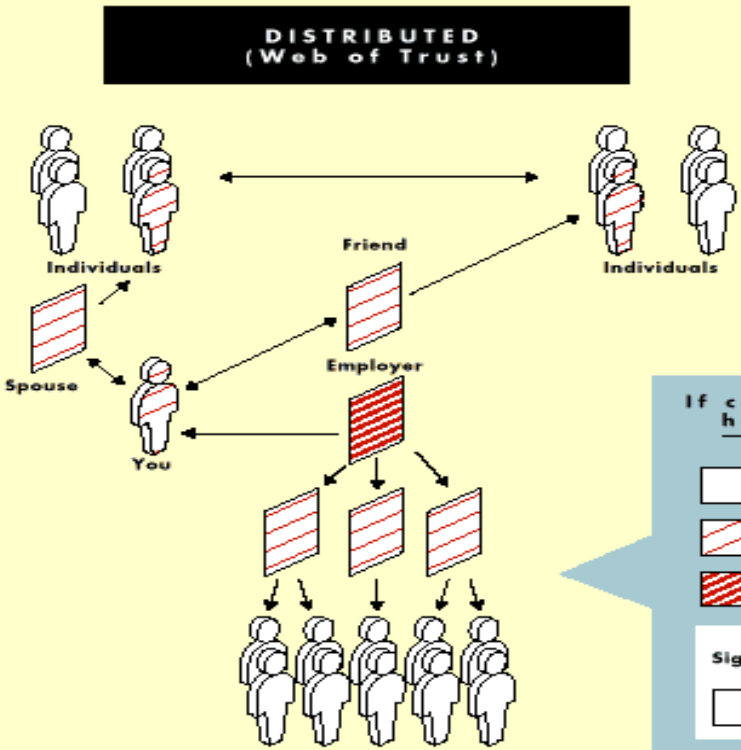
Biometric Economics

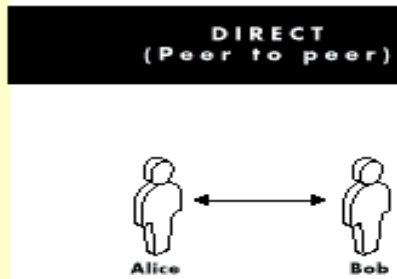
Biometric Revenue by Technology -
Projected Revenue for 2003 = $594 Million

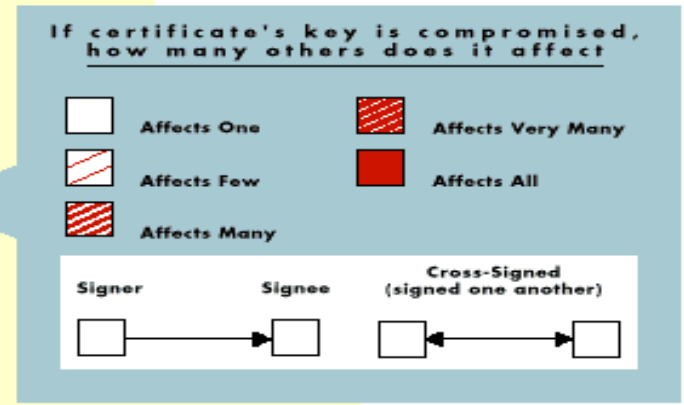


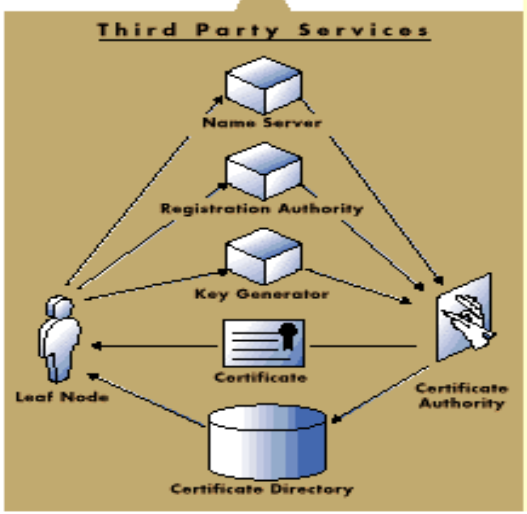
"Web of Trust" Modalities

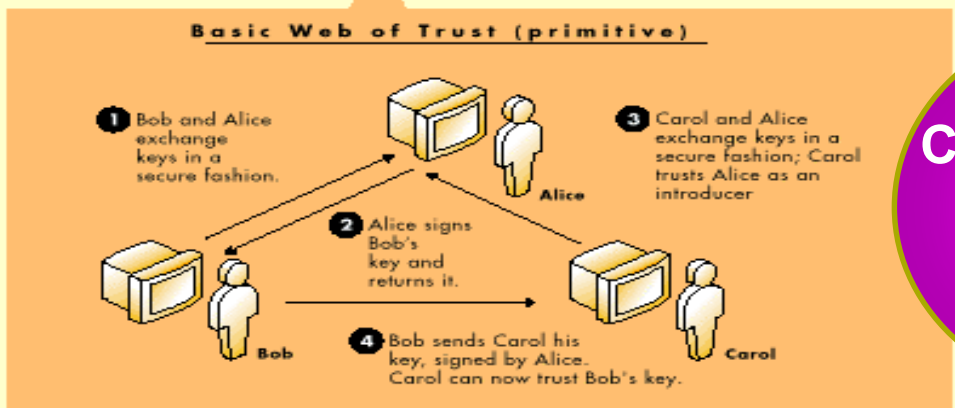












Conditionalized Existence Acceptance

Graphic courtesy of Charles Breed

VCA - Virtual Commodity Assets

Smart Cards

Digital Wallet

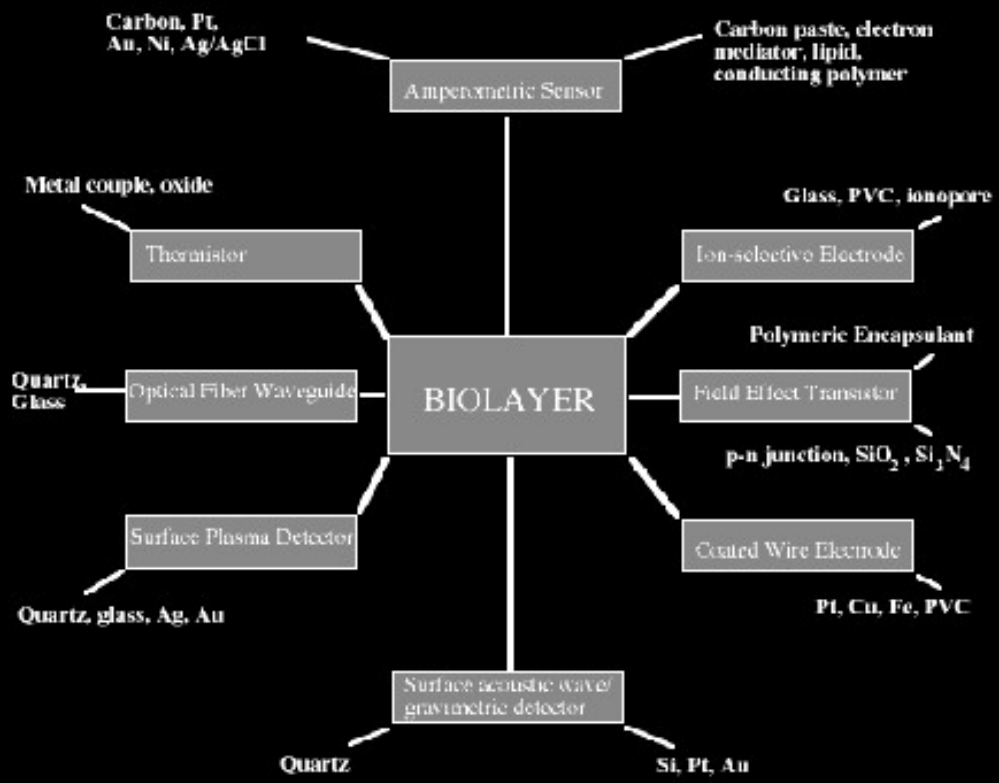
Ubiquitous

Virtual Currency

Grid Access

Biometric Methodologies

- Face / Multimodal
- Fingerprint
- Retinal
- Hand and Finger Geometry
- Vein Patterns
- Handwriting
- Thermography
- Iris
- Voice
- Future - Integrated Biosensing



Biometric Technology Providers

Retinal:

Eyedentify Inc.

Retinal Technologies, Inc.

Hand and Finger Geometry:

BioMet Partners

Recognition Systems

DERMALOG

Vein:

AdvancedBiometrics, Inc.

neusciences (formally NCS)

VeinID

Iris:

British Telecom; Keeping an eye on Iris and Personal Secure Access to Networked Applications - the use of Iris Recognition for User Validation

EyeTicket, Inc.

Iridian Technologies (formerly IriScan)

IriScan (see Iridian Technologies, above)

Sensar (see Iridian Technologies, above)

Face:

AcSys Biometrics

A4Vision SA

Attrasoft

Aurora Ltd.

Banque-Tec

BioCom

Biometrica Systems

BiometriKa

Cognitec Systems GmbH

C-VIS Computer Vision and Automation GmbH (FaceSnap)

DERMALOG

eTrue

Face Detection HP

Face Recognition Homepage

FACE Technologies (PTY) Ltd.

IdentAlink Ltd.

Image-Metrics, Ltd.

Imagis Technologies, Inc.

ImageWare Systems, Inc.

Keyware Technologies

MIT Media Laboratory Vision Modeling Group

Neurodynamics

neusciences (formally NCS)

Plettac Electronics

Polaroid

Ringdale

Sintec Co., Ltd.

SpotIt

TechObject Corp.

USC's Laboratory for Computational and Biological Vision (VCBV)

Viisage Technology

Visionics

VisionSphere Technologies

ZN VisionTechnologies AG

Various/Others:

AiT Corporation

AuthX Document Protection System

Bell Identification

Biometric Partners, Inc. - Touchless Fingerprint, Palm and Hand Sensors

BioNetrix Corporation

DataCard Group

DataTreasury Corporation

Imaging Automation, Inc.

Mitretek Systems - Biometric Identification

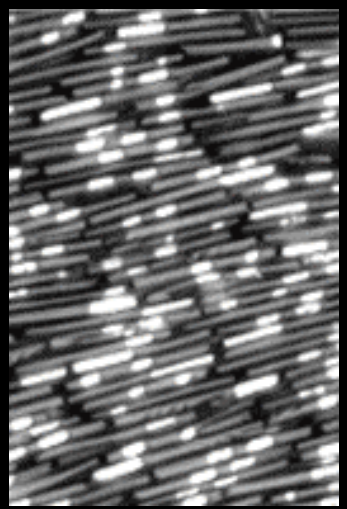
Net Nanny (BioPassword - keystroke verification software)

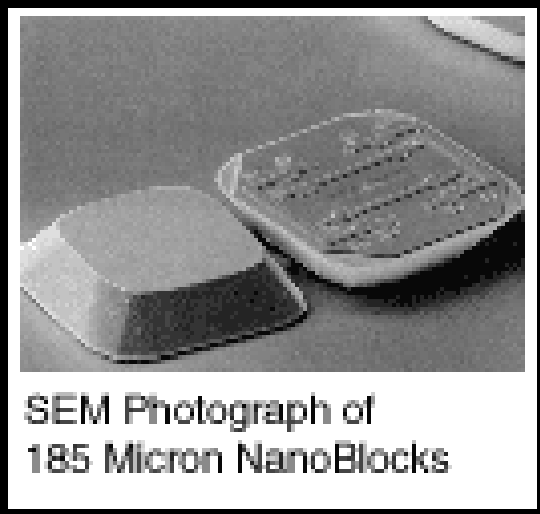
Neurotechnologija, Ltd. (fingerprint, iris recognition software)

Siemens

Ubiquitous Object Interface

- Nano Bar Codes
- Micro / Nano RFT devices
- Printable Nano-circuitry

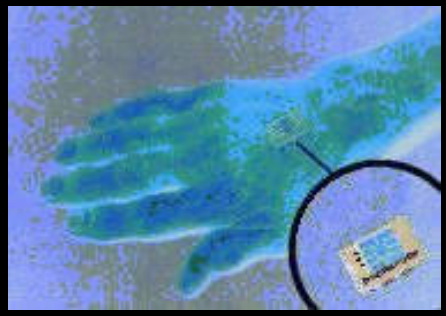


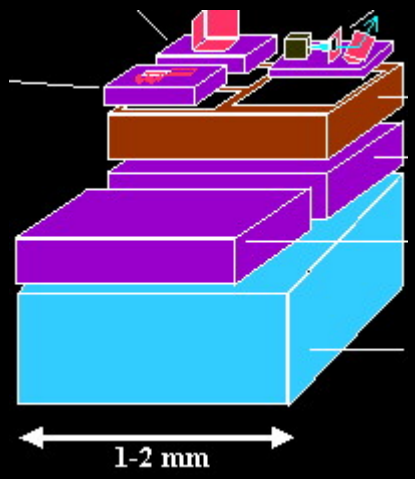


SEM Photograph of
185 Micron NanoBlocks

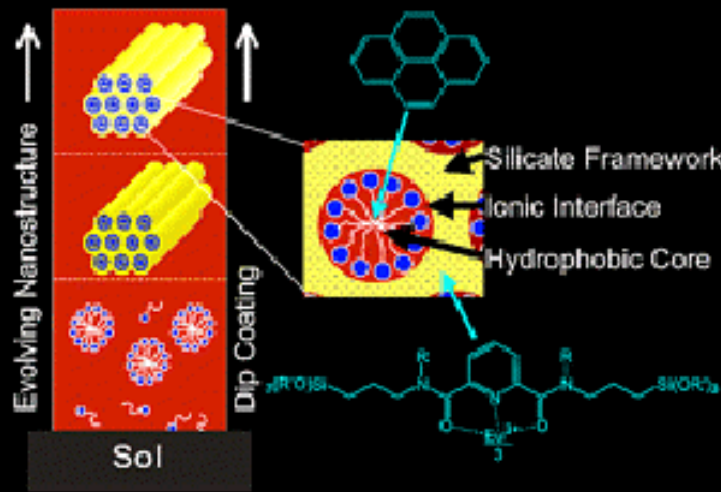
Future Biometric Immersion

Digital Angel™ CORPORATION



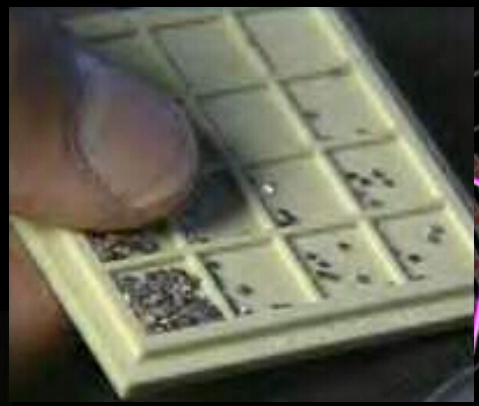


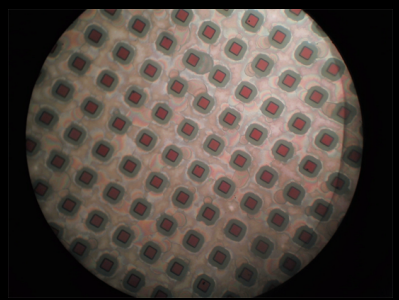
- Biochip Implants
- Distributed Sensors
- "Smart Dust"
- Molecular Sensors

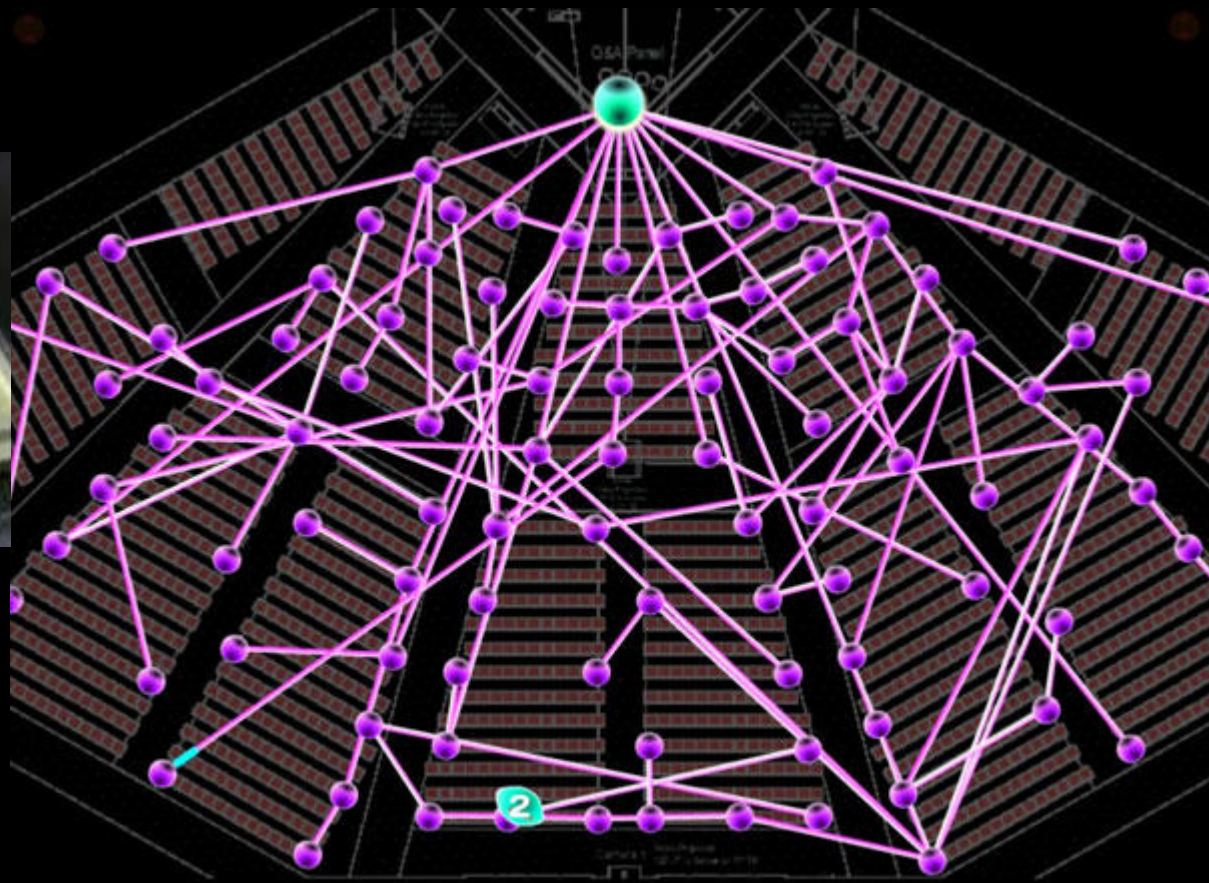


Future Biometric Immersion

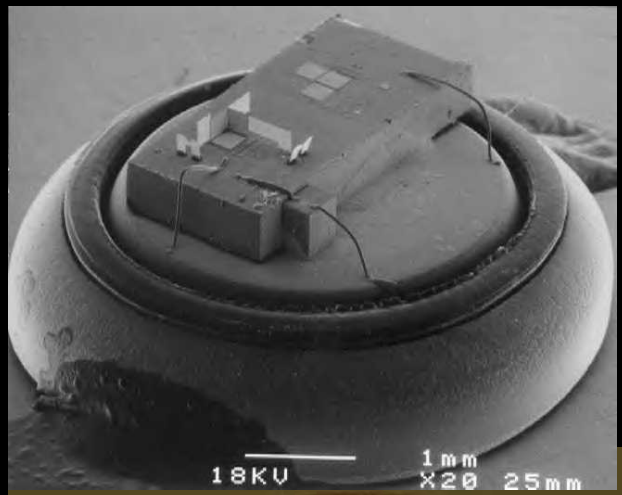
- Sensor “Swarms”



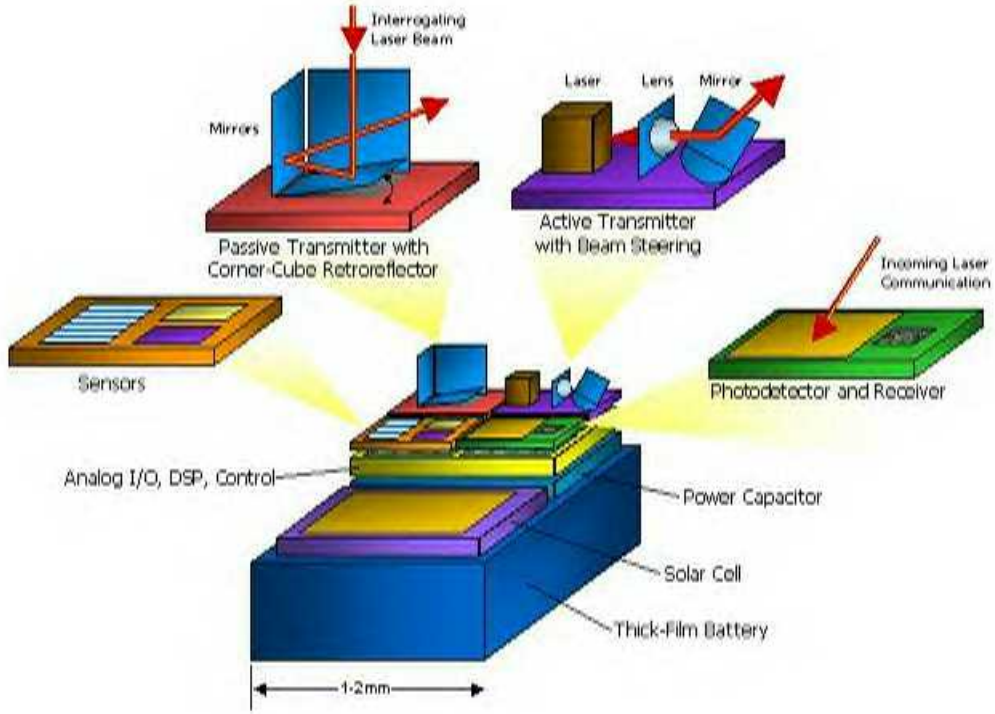




Future Biometric Immersion



- Autonomous Distributed Entities
- Ubiquitous Presence Monitoring



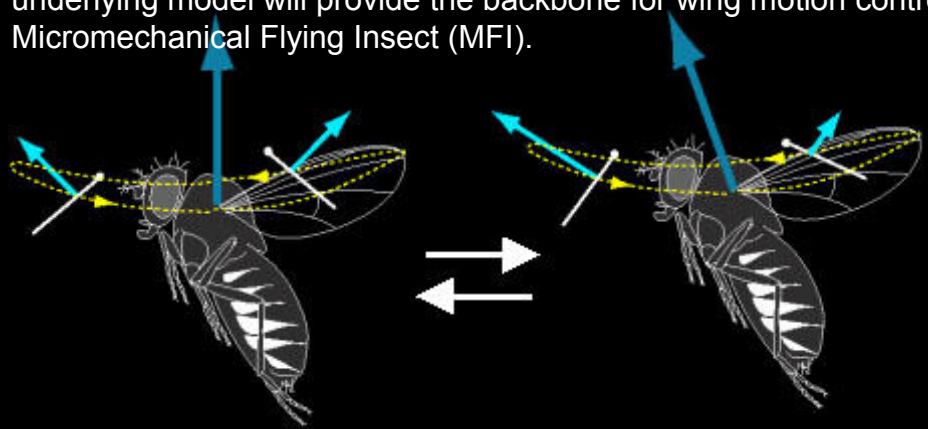
Biological Insight to Flight Control
"RoboFly" Distributed Sensor Project

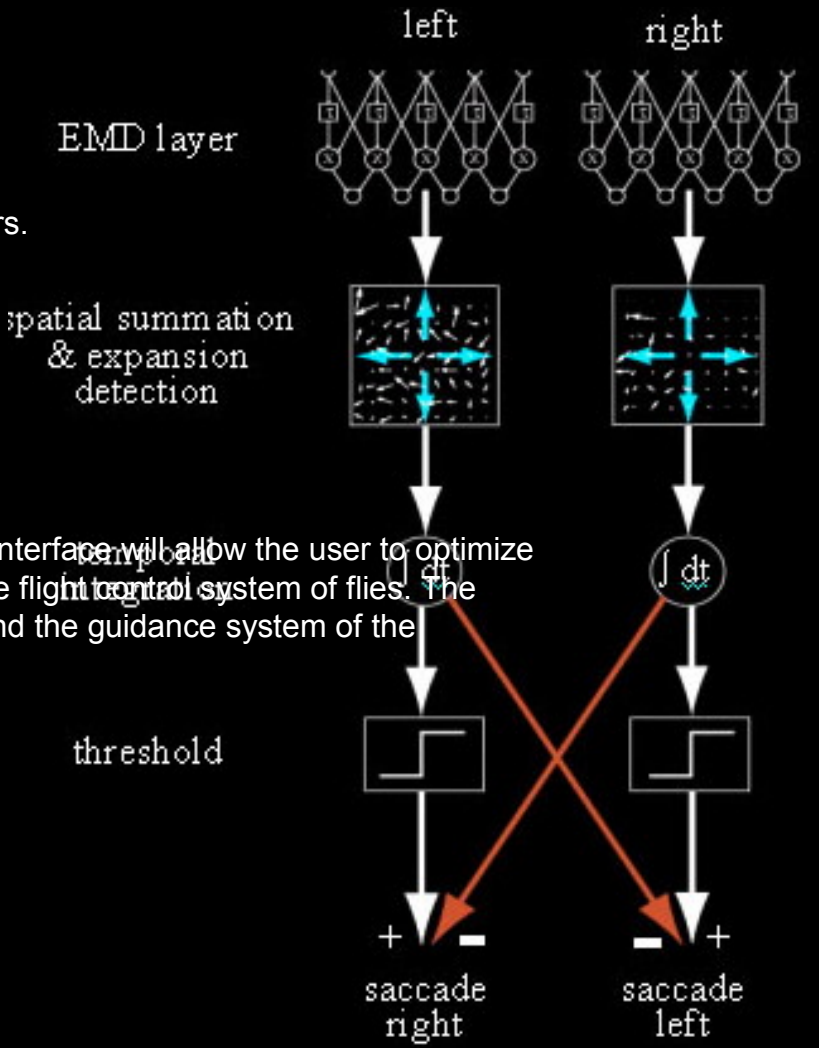
PROJECTED MILESTONES

- Complete measurement of free flight wing kinematics.
- Program tethered flight arena for mechanosensory closed-loop.
- Quantify influence of olfactory odors on visually-elicited flight maneuvers.
- Construct robotic gantry for testing flight control algorithms.

ENVISIONED DELIVERABLES

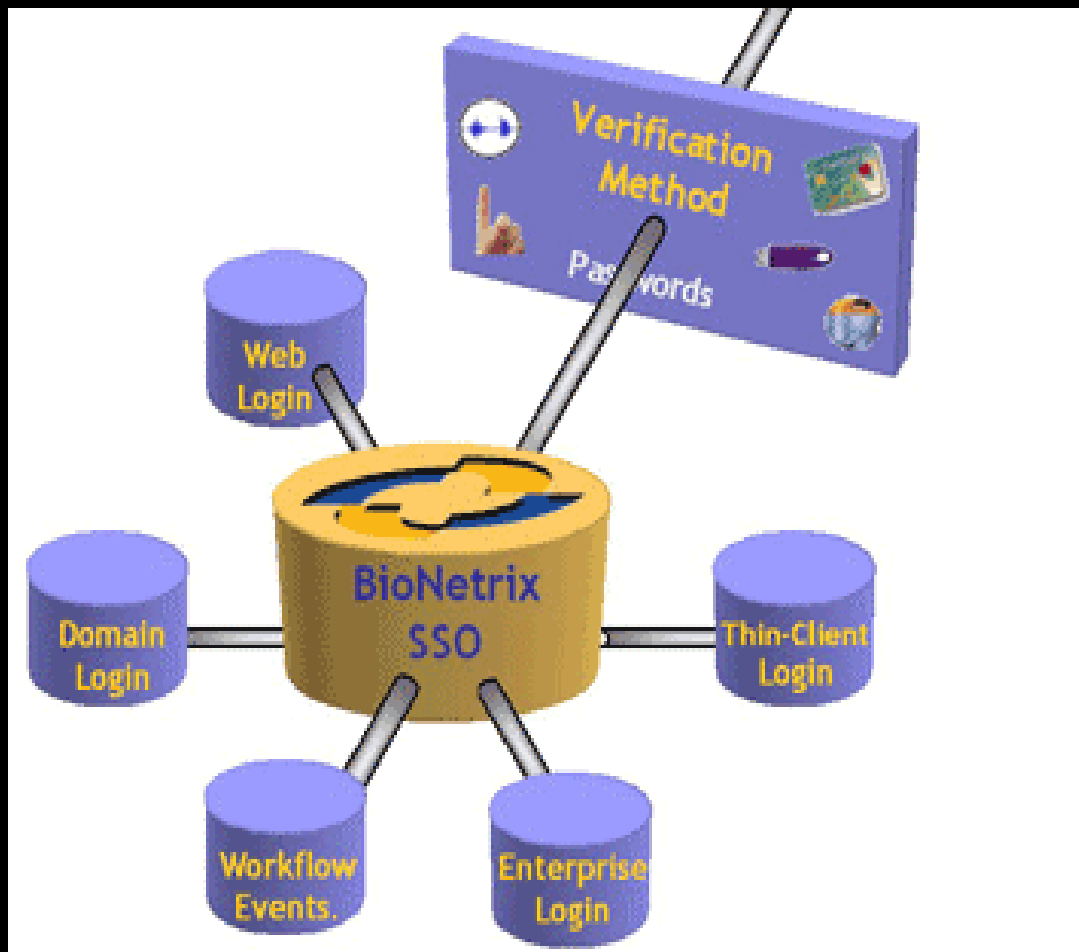
Design software for biomimetic flight control systems. A graphical user interface will allow the user to optimize features of a visual, inertial, and olfactory guidance system based on the flight control system of flies. The underlying model will provide the backbone for wing motion controller and the guidance system of the Micromechanical Flying Insect (MFI).





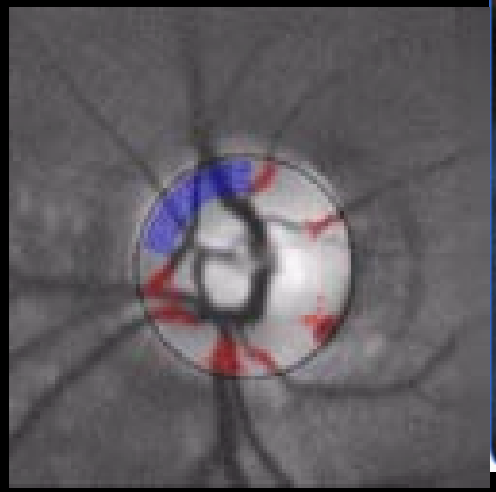
Biometric Process Management

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



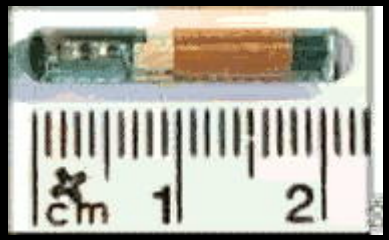
Ubiquitous Access Portals

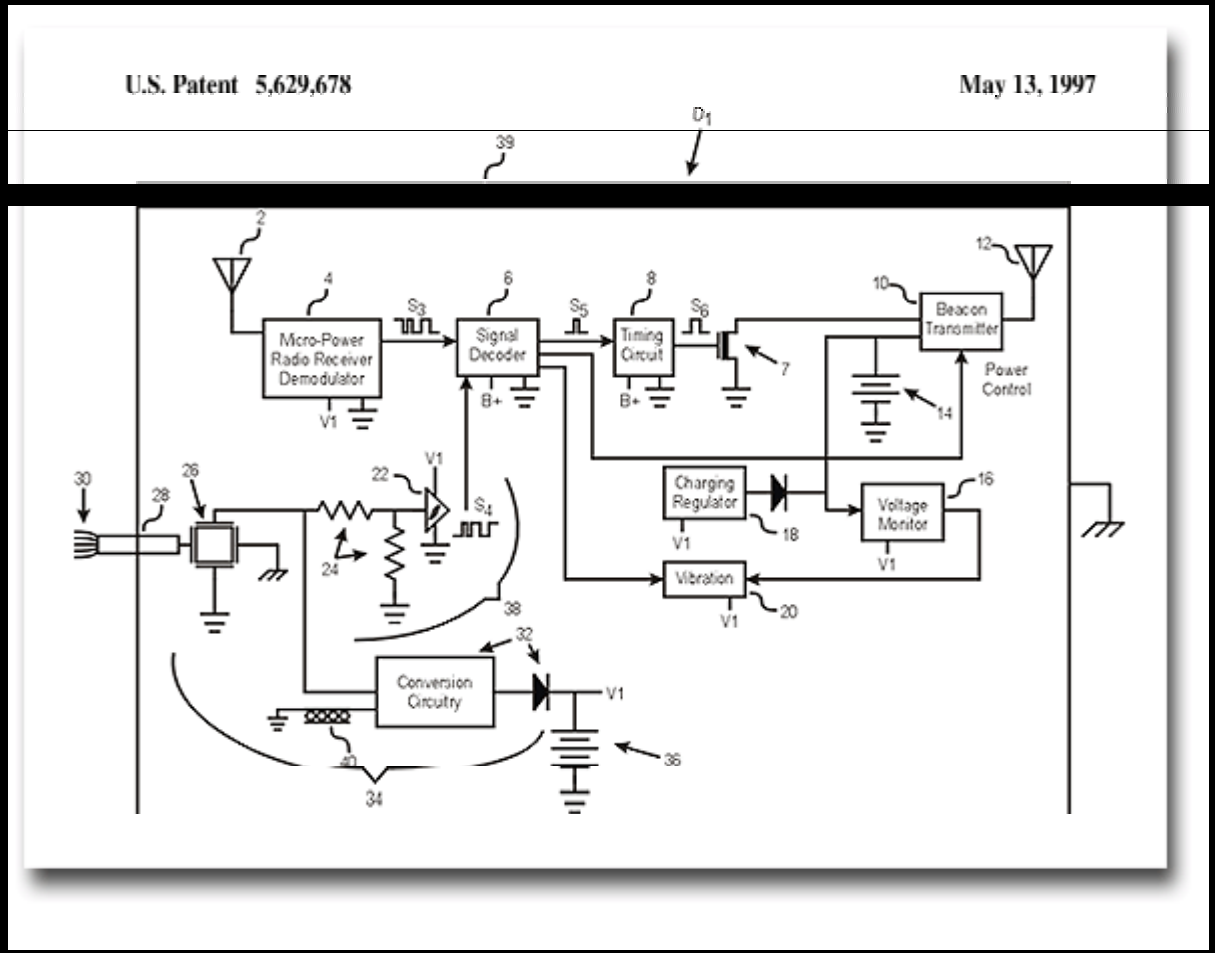
- Biometric Transaction Coupling
- Optional Process Integration
- User Transparency



Ubiquitous Immersion

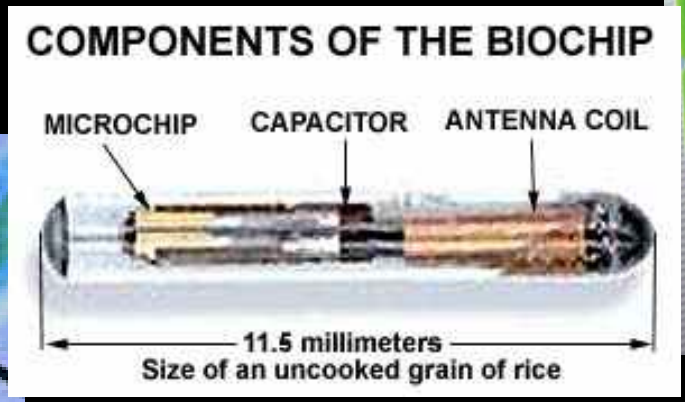
- Implantable biochip Example

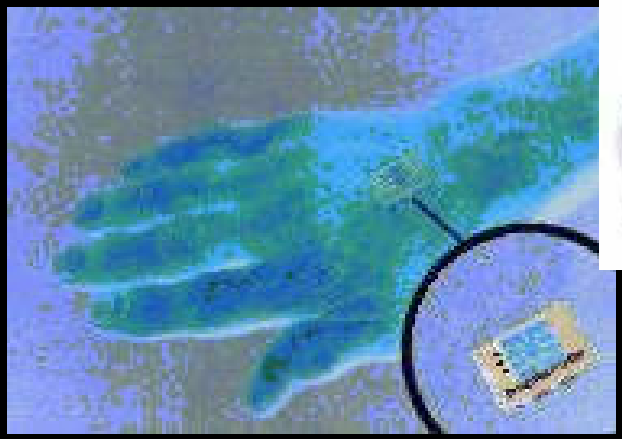




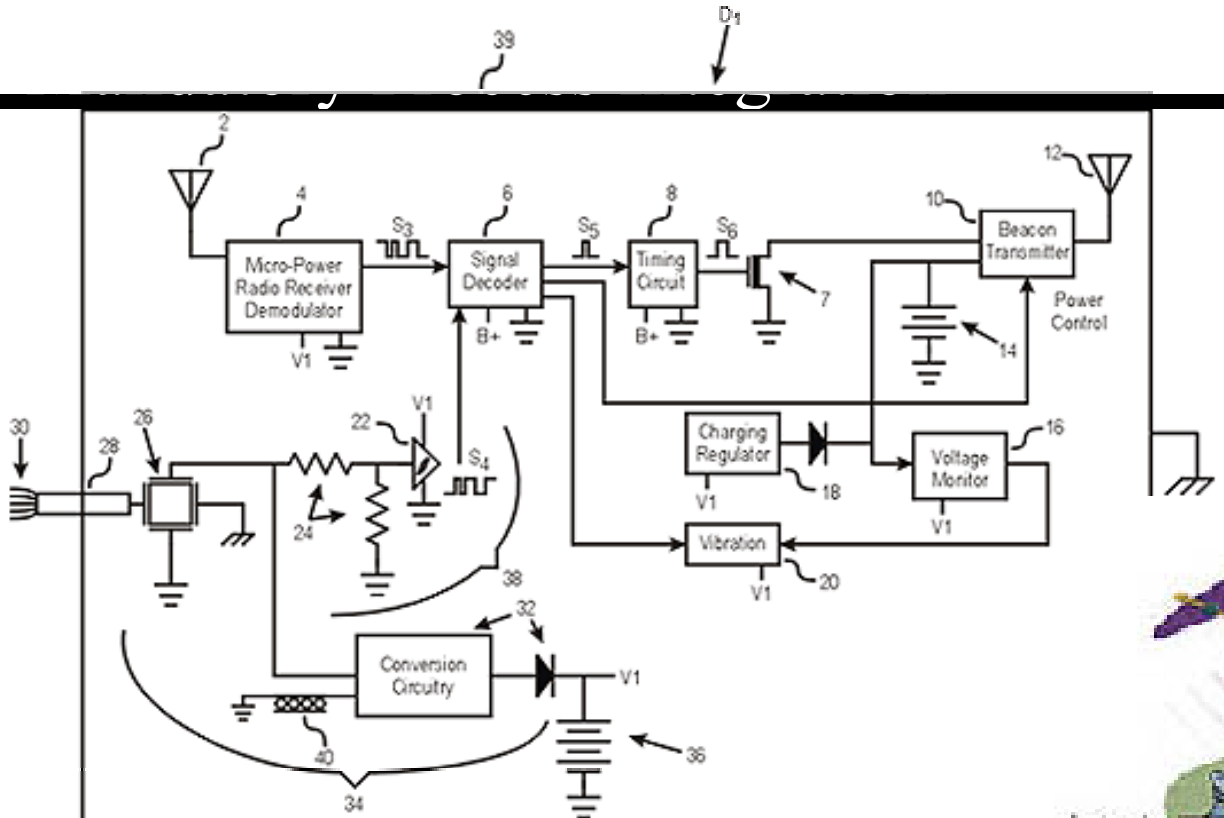
Ubiquitous Existence Monitoring

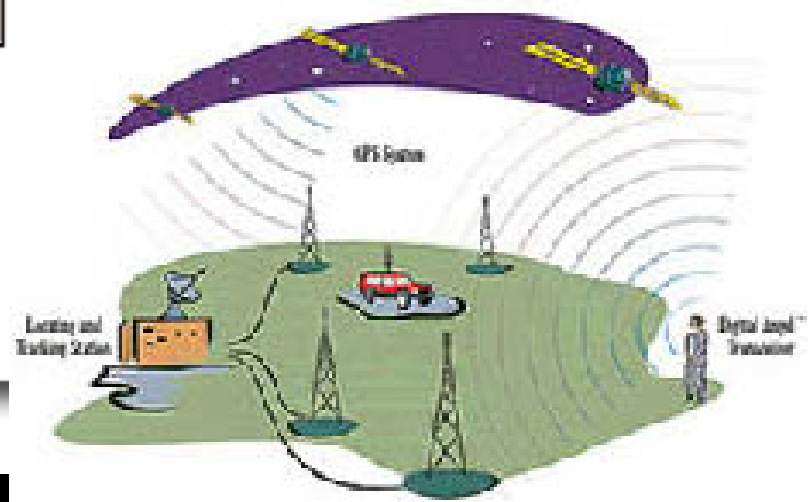
- Transition from exobiometrics
- Mandatory Process Integration





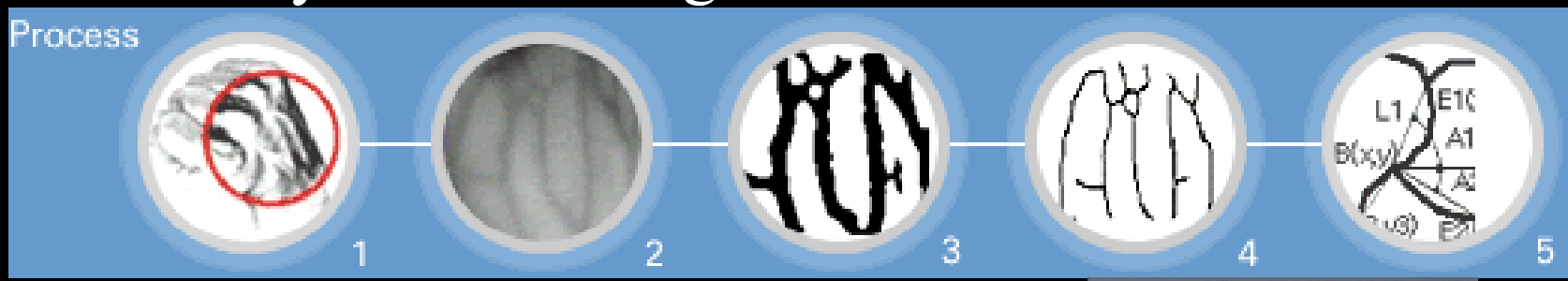
Ubiquitous Existence Monitoring





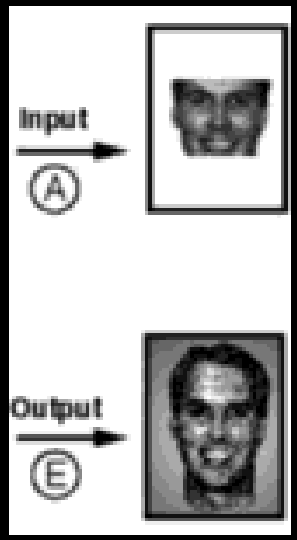
Presence Acquisition and Acknowledgement

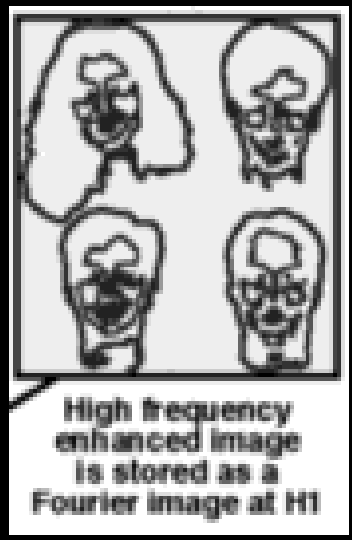
- Transition from exobiometrics
- Mandatory Process Integration

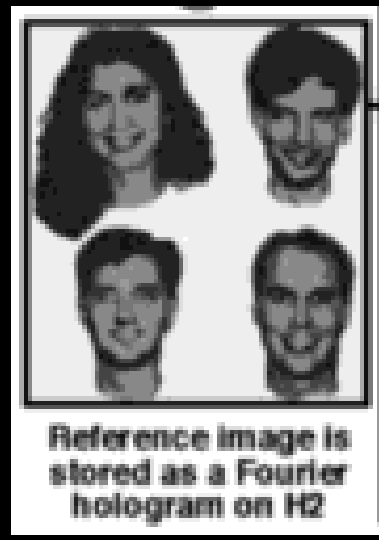


Content Addressable Feature Recognition

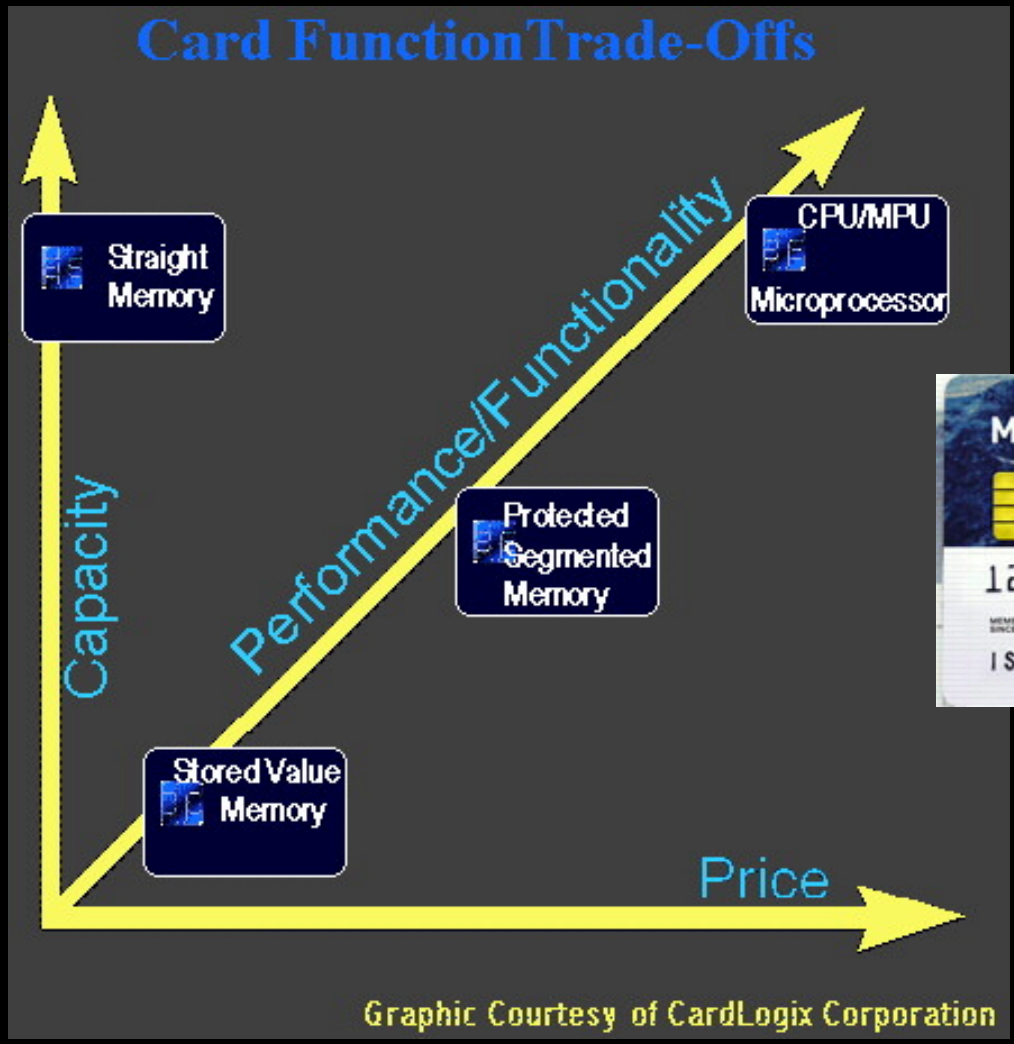
- Fourier / Holographic
- Wavelette
- Fractal



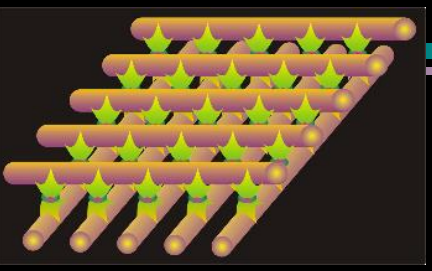


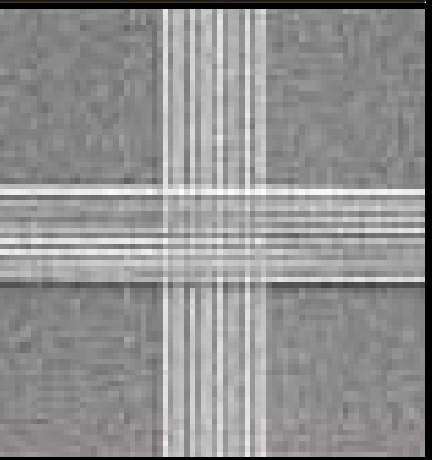


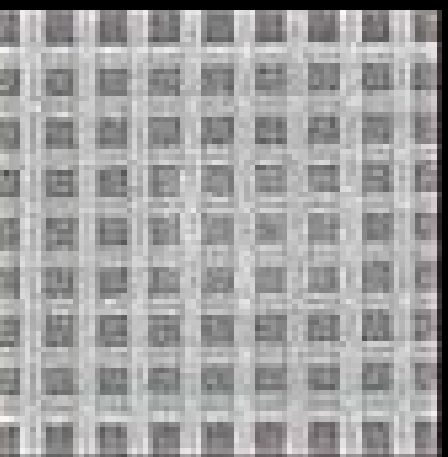
Process Brokeraging Valuation - Realtime IP Resource Boundaries



Nanoelectronics / Molectronics
It's not just about "little devices"







- Extreme high density functionality
- "Printable" electronics on diverse materials
- Reconfigurable logic arrays, memory fabrics
- Low cost, disposable device technology
- Highly adaptable
- Integrated sensors, processing, memory

Biometric Convergence

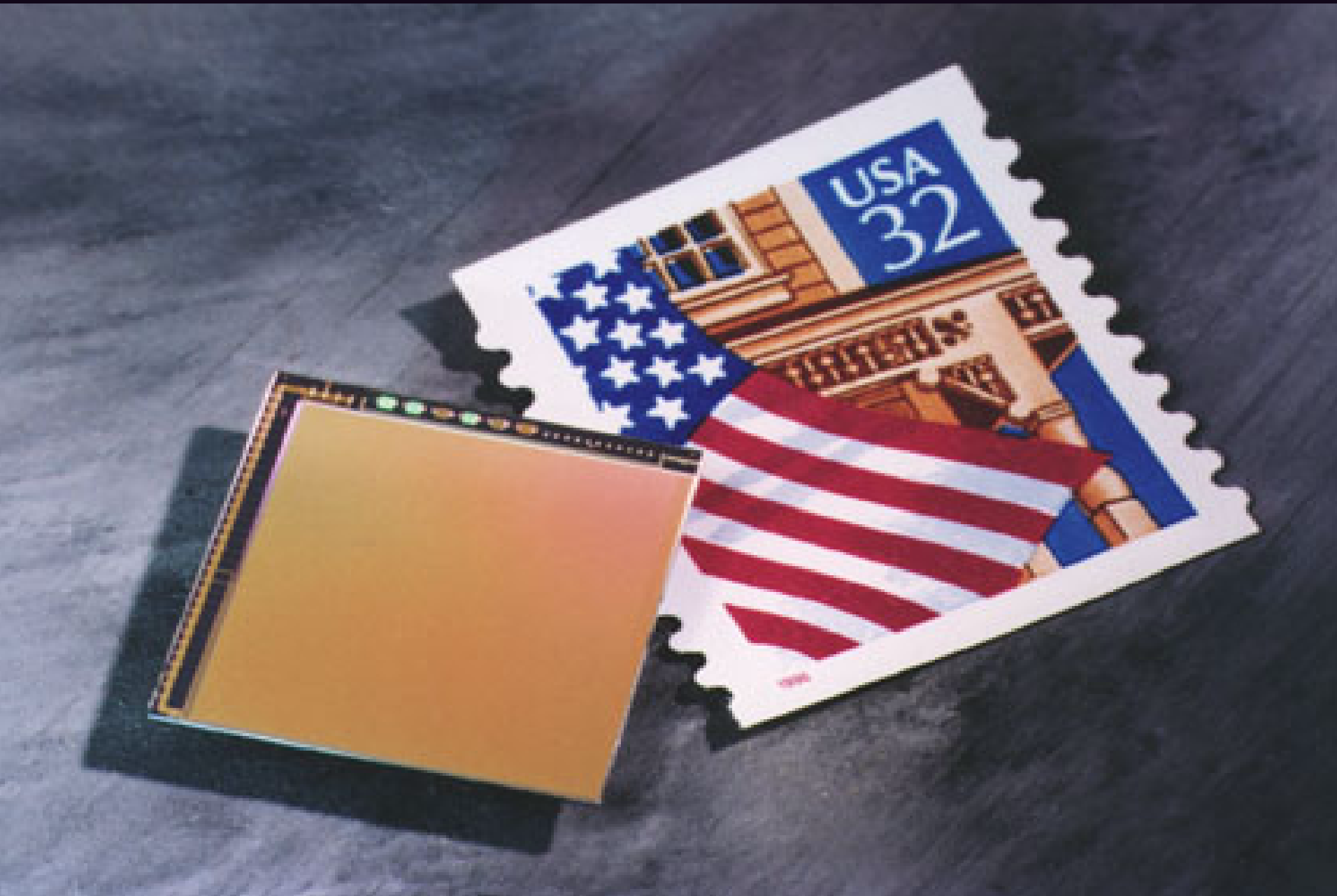
› custom solutions

WinBadge® Aviation
Integrated Airport ID Security System

Voter Registration *Coming Soon!*
Voter Registration Photo ID System

National Id & License *Coming Soon!*
License & National Photo ID System

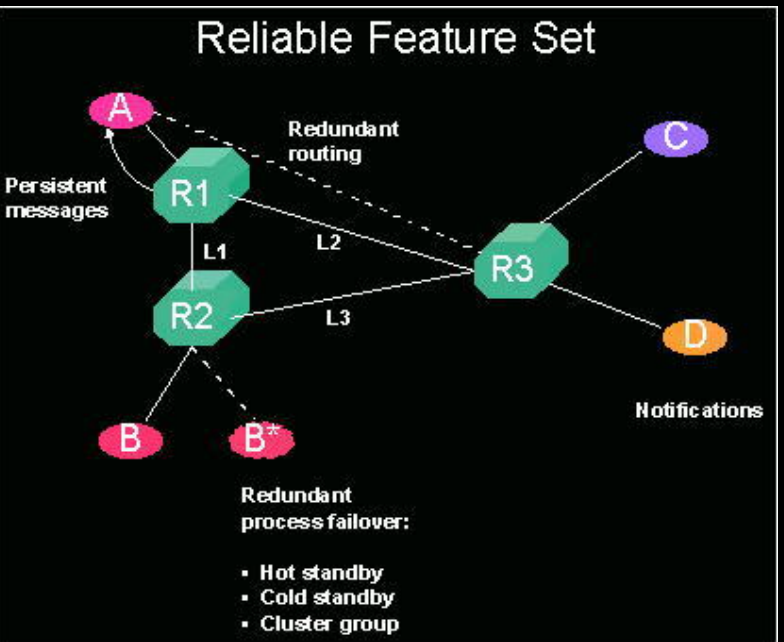
Smart Sensors Everywhere

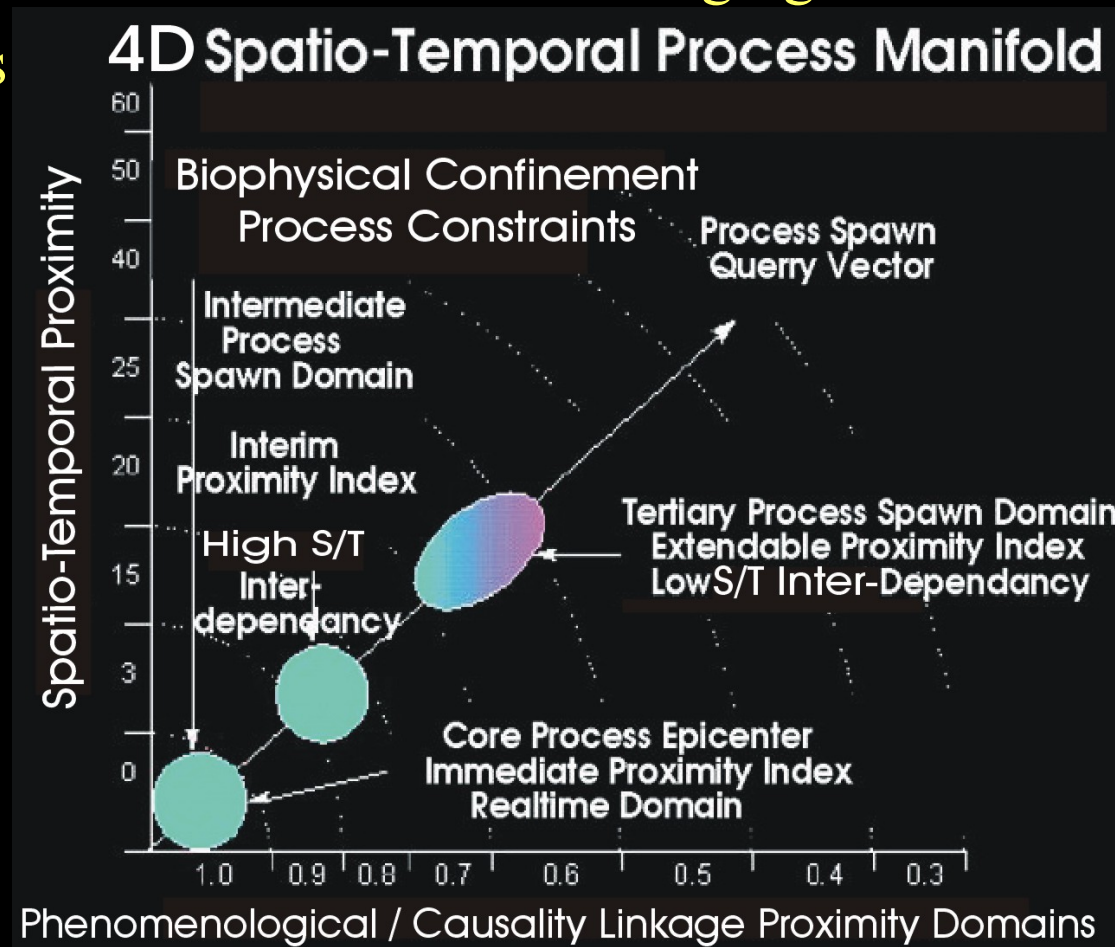


Ubiquitous Access Portals Everywhere – Define Portal

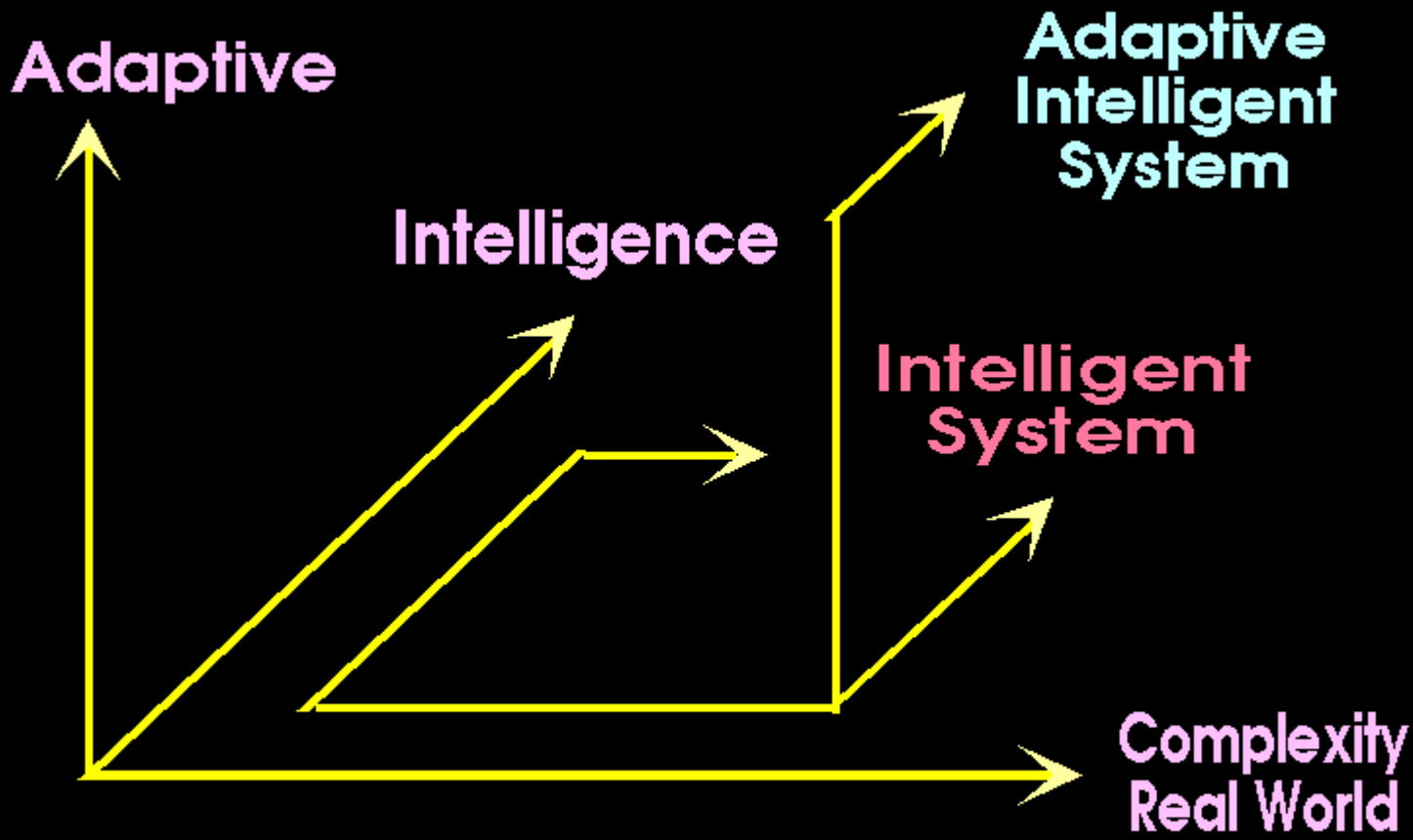
Key Elements of the Emergent Operational Ecology

- Sovereign Knowledge Domains
- Ubiquitous Computing "Fabrics" - Access and Brokeraging
- Human / Internet Symbiosis
- Access Convergence

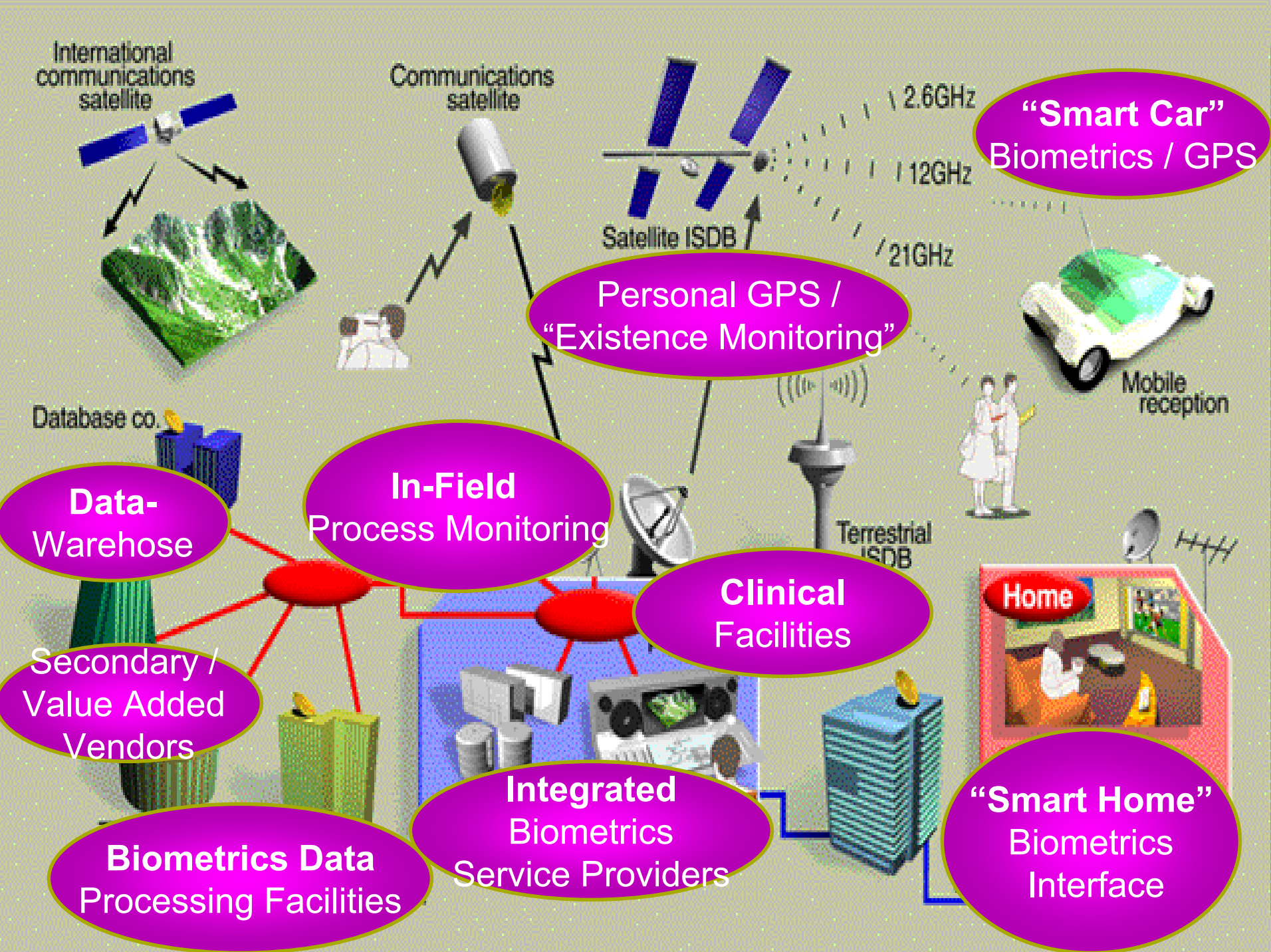




Ubiquitous Distributed Adaptive Intelligence Resources

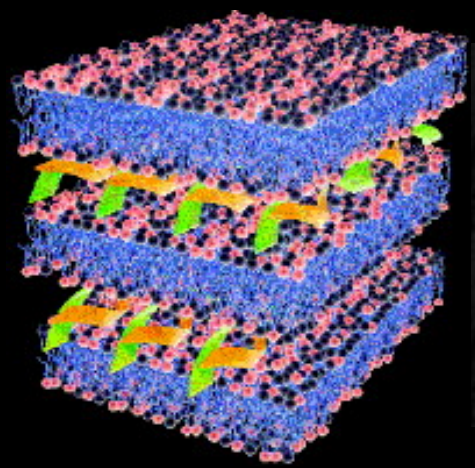


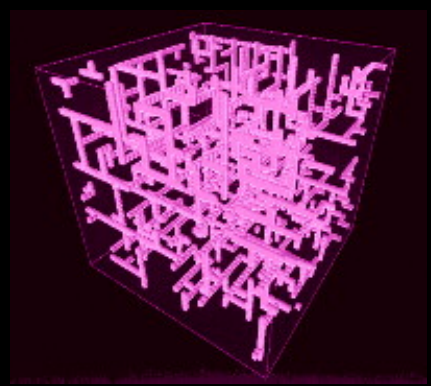
Adaptive Intelligent System Process Model


International communications satellite
Communications satellite
2.6GHz
12GHz
21GHz
Satellite ISDB
"Smart Car" Biometrics / GPS
Personal GPS / "Existence Monitoring"
Mobile reception
Database co.
Data-Warehose
In-Field Process Monitoring
Terrestrial ISDB
Clinical Facilities
Home
Secondary / Value Added Vendors
Integrated Biometrics Service Providers
"Smart Home" Biometrics Interface
Biometrics Data Processing Facilities

The New Economy - Virtual Asset Technologies

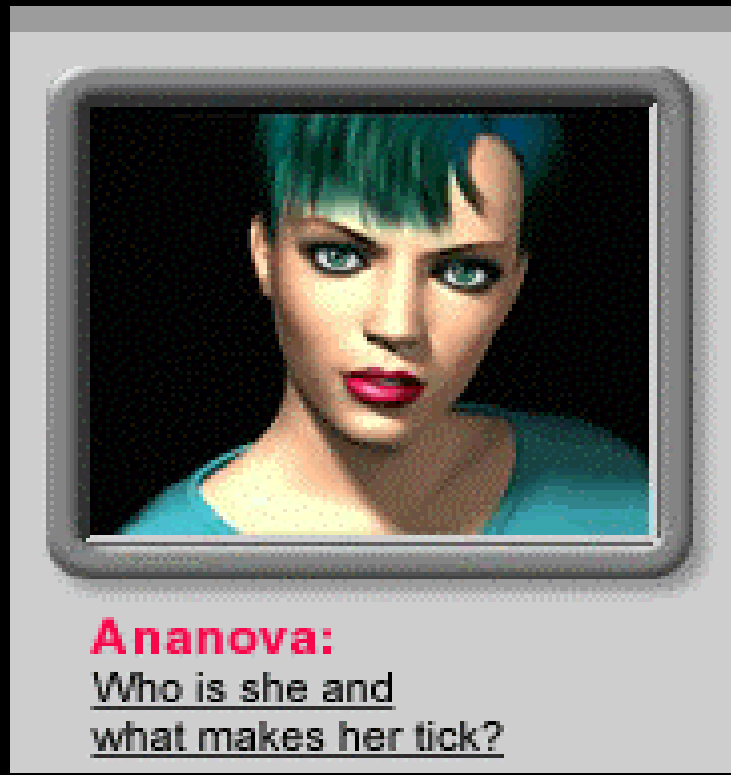
- Ubiquitous Immersion / Presence Transaction
- “Smart” Sensors / Evolvable Systems
- Virtual “Intelligent Entites”
- Intelligent Agents and Agent Colonies
- Synthetic Sentience as a Strategic Resource





Evolutionary Eventstream Imperative

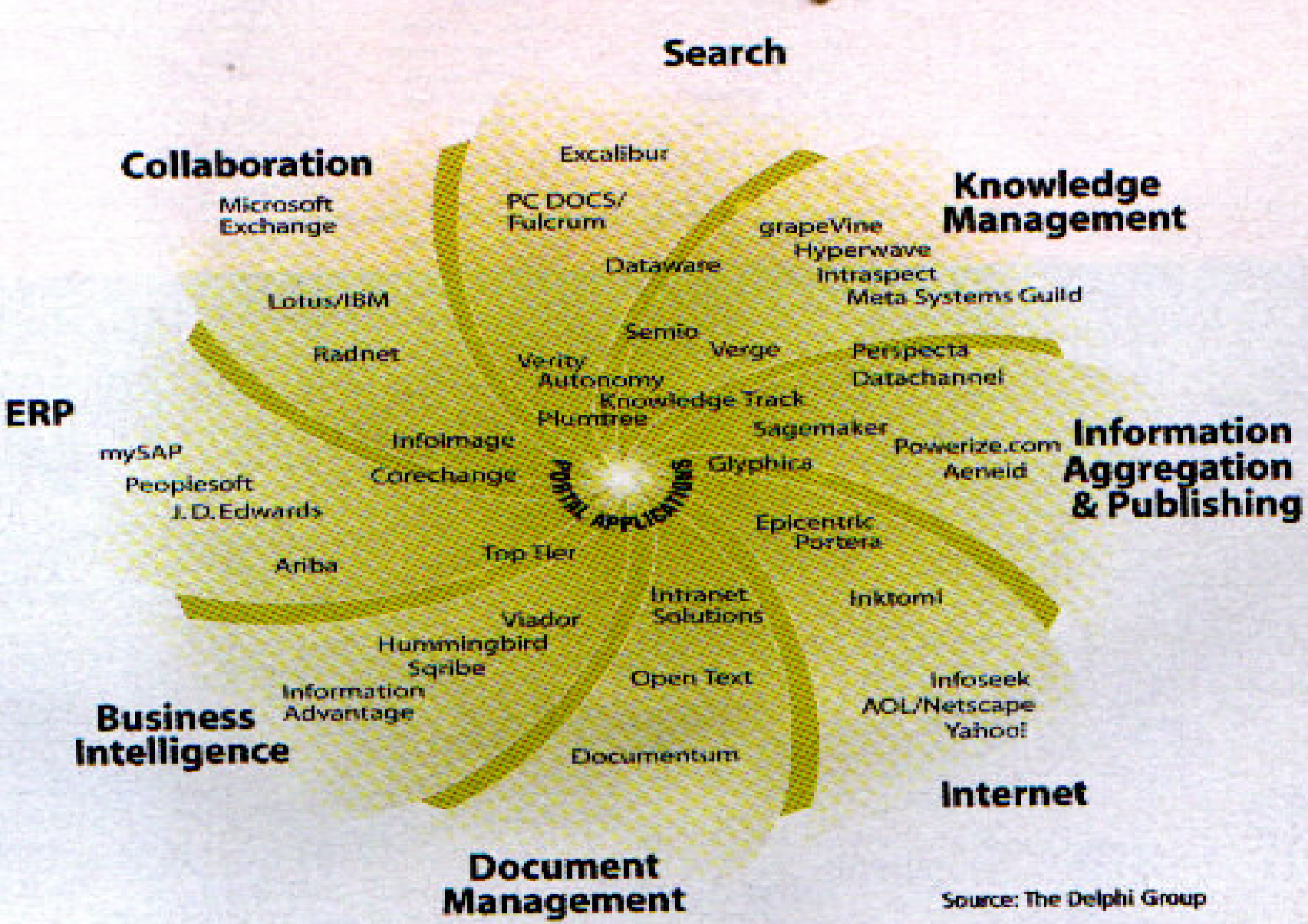
- Emergence of “synthetic entities” as a culture norm
- Crossing of an evolutionary eventhorizon
- Peer to peer tele-existence streaming
- Hybrid biological systems integration



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

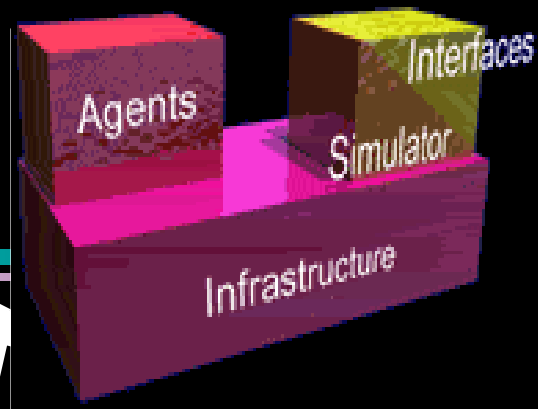
Contextual Cognition in the Emergent Ecology > Hyperdimensional Existence Navigation



Portal applications can serve as the hub for organizing various types of KM activities and related products.

"Virtual Human" Entity Interface

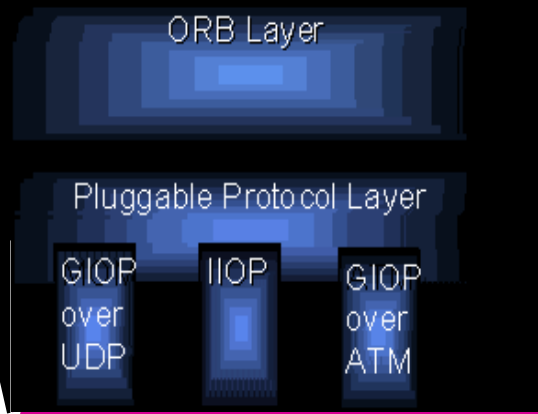
Ubiquitous Access Portals



Intelligent Agent Hierarchies

Smart Sensors Everywhere

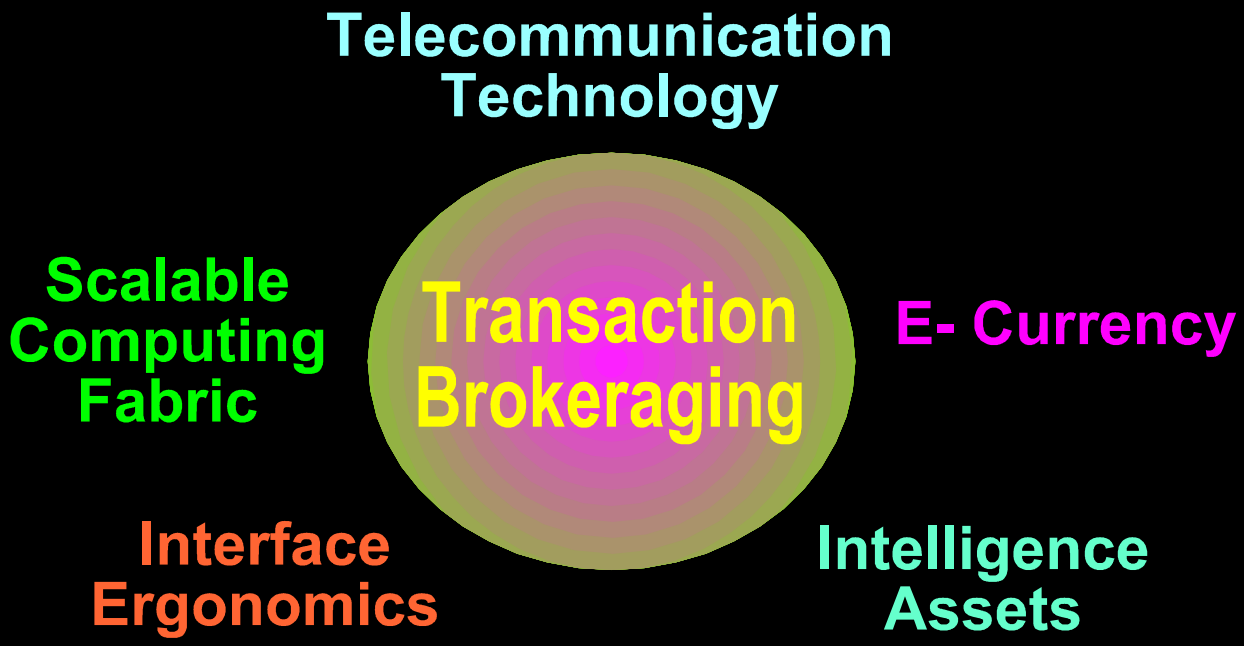
Process Convergence



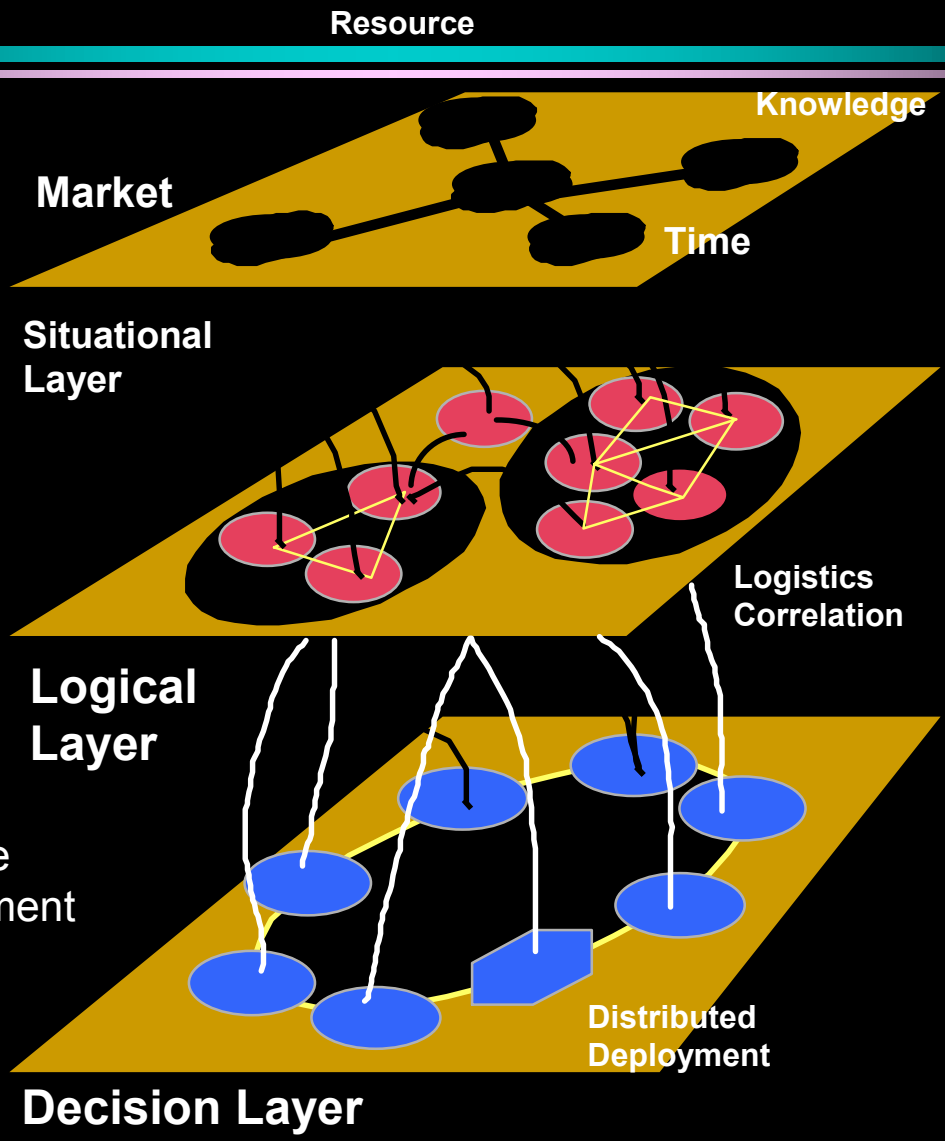
Process Brokeraging Architectures

The Evolving Economic Model

- Product / Service Delivery > Process Brokeraging
- Currency Instruments > Ubiquitous E-Currency Grid
- Market Analysis > Demographics Topologies



Decision Rendering Process Map



Situational Layer Input Stimulus Integration – Biometrics, Response & Cognition Capture

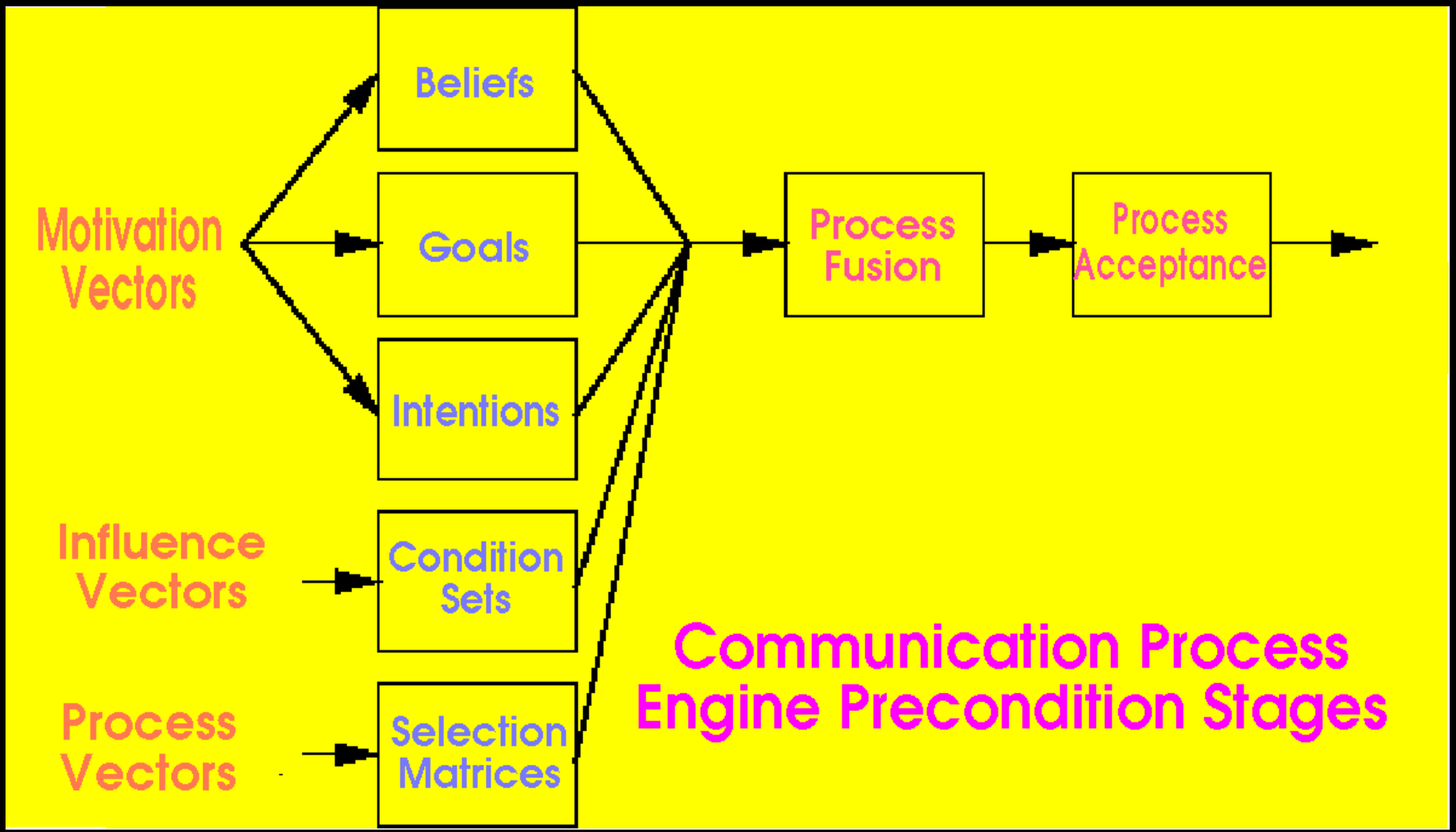
IT Resources & Infrastructure
- Data / Knowledge Management
- Process Integration

FUNCTIONAL MAP - Conceptual partitioning of functional domains

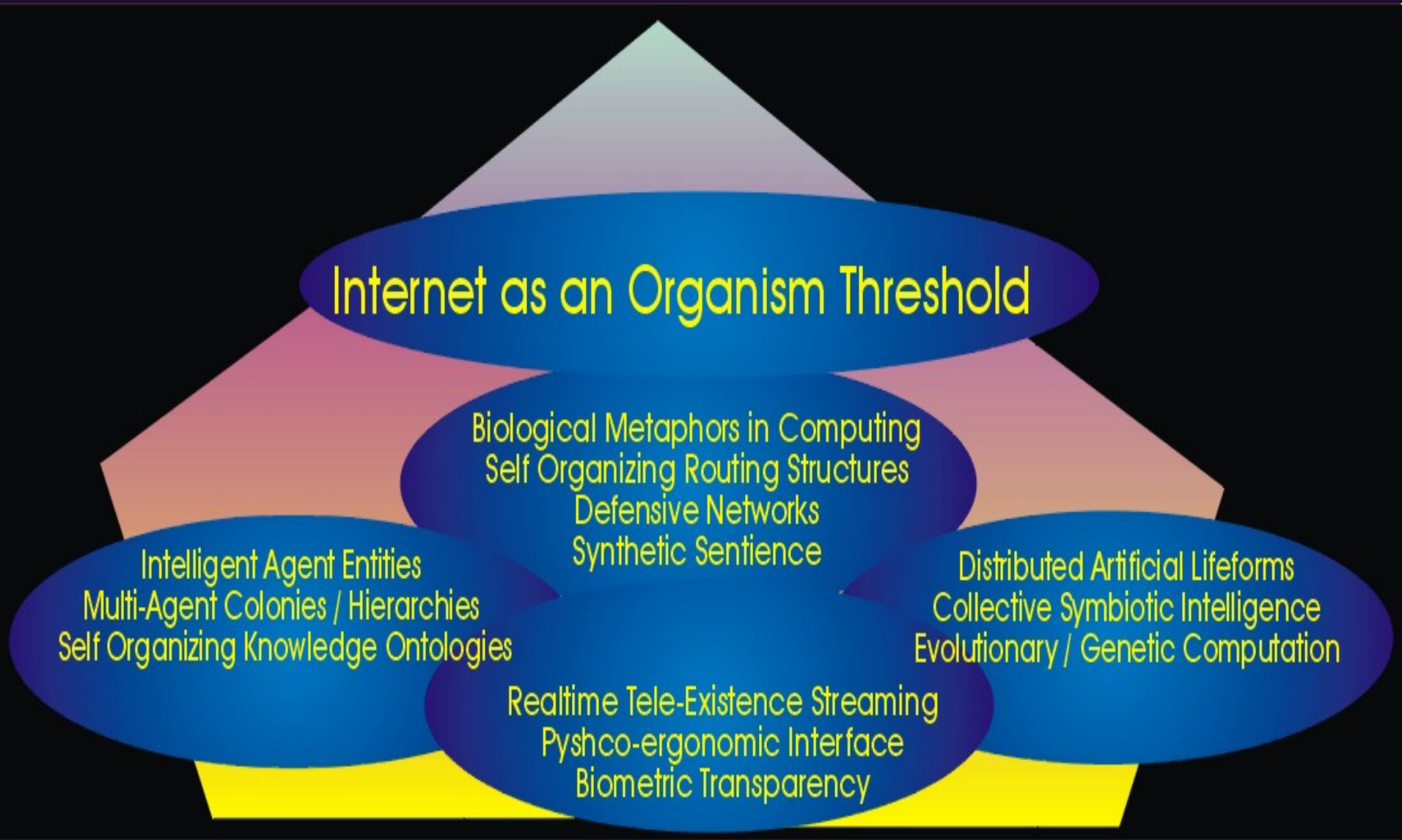
LOGICAL MAP - Functional partitions are separated into localized “process domains”

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

Artificially Enhanced Complexity Management - Process Control



Process Elements of the Emergent Human / Internet Symbiosis



Biological System Process Modalities - Evolution of the Human / Internet Symbiosis

Ubiquitous Biometric Interface

Self Evolving Knowledge Domains

Behavioral Template Mapping

Content Definable Functionality Mapping

Self Organizing Networks

Content Addressable Information Mapping

Conclusion

Life Itself is Being Re-Engineered
Merging of Human and Synthetic Intelligence
The Spawning of Economic Ecologies