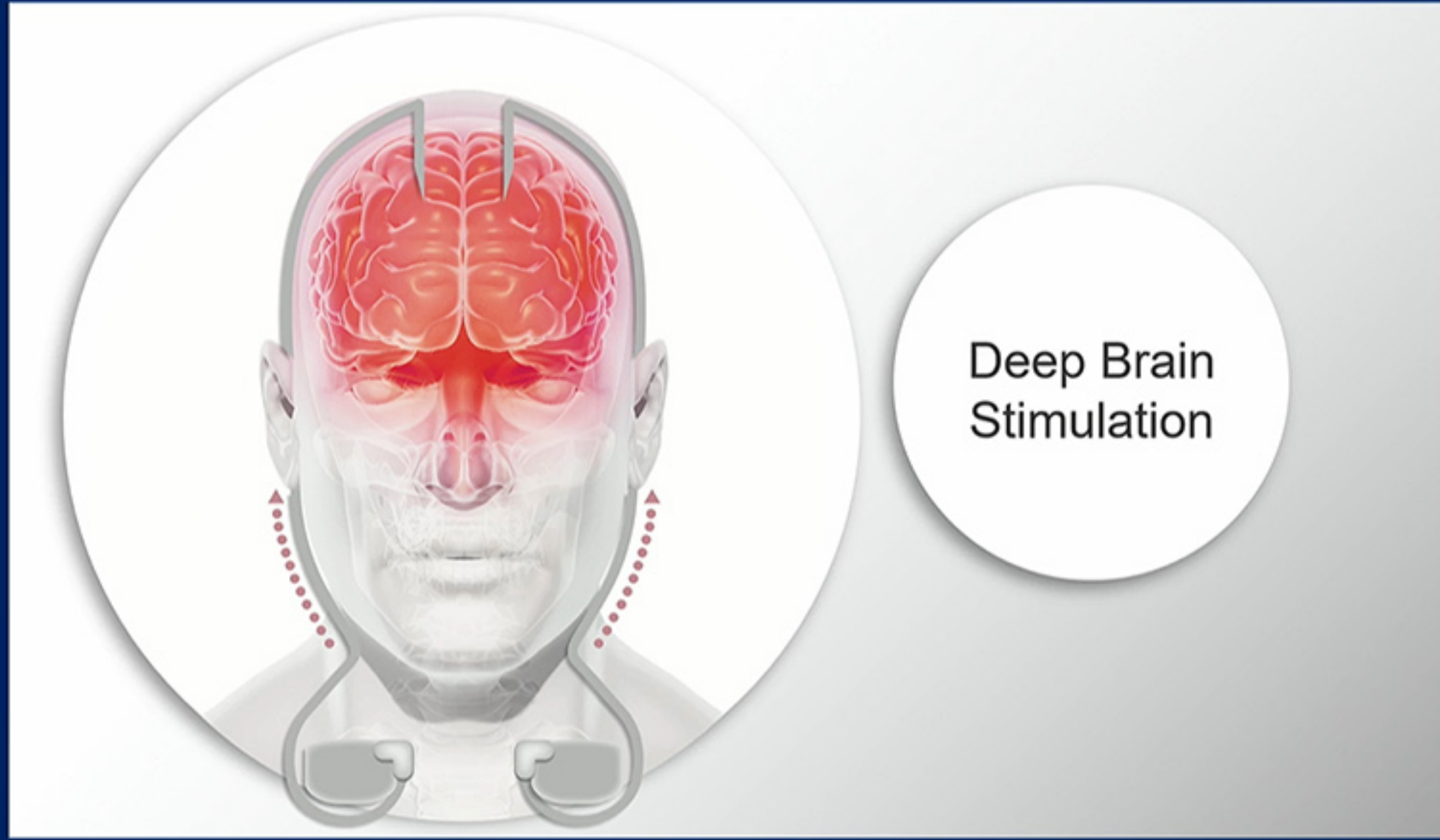
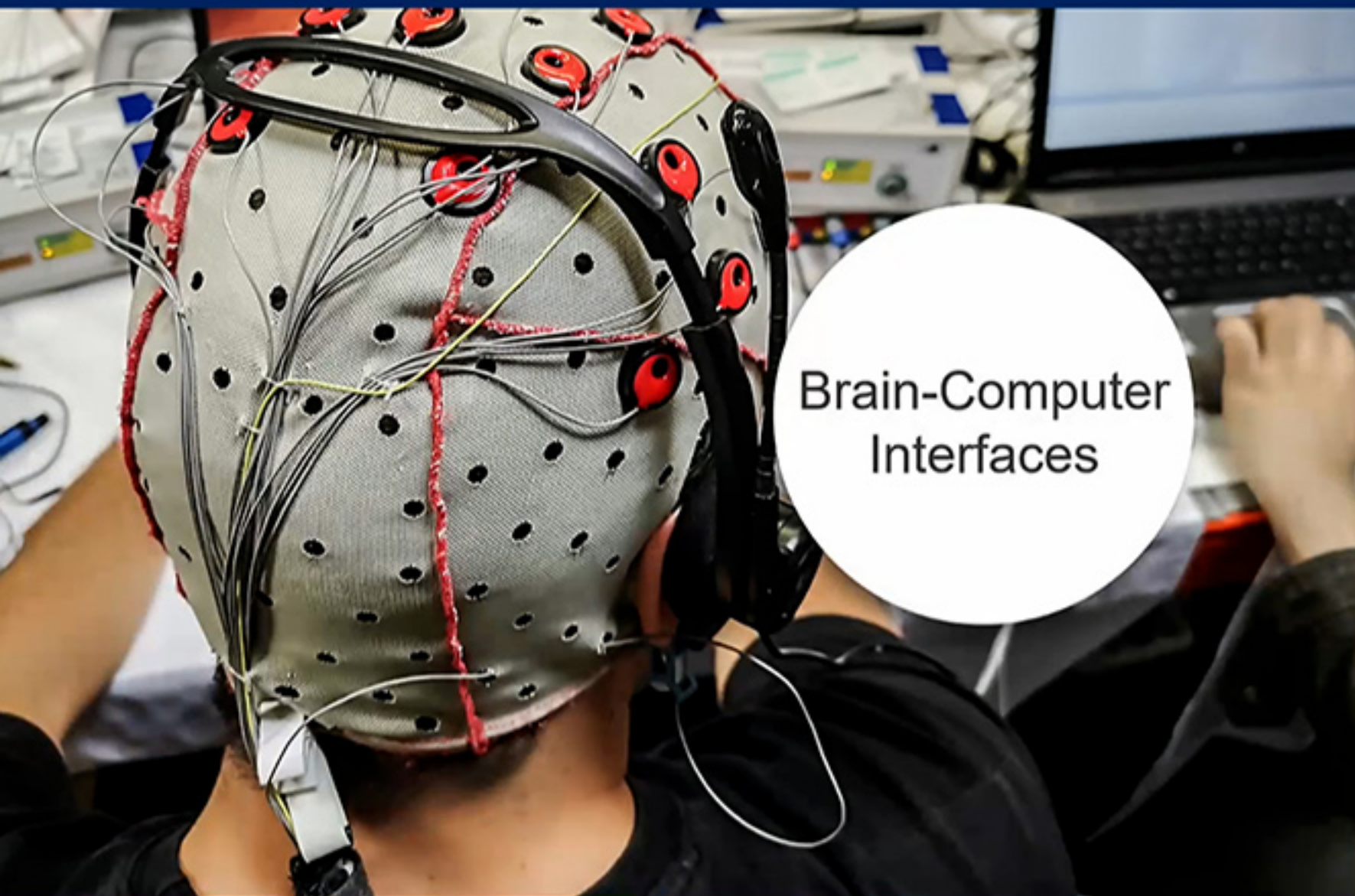




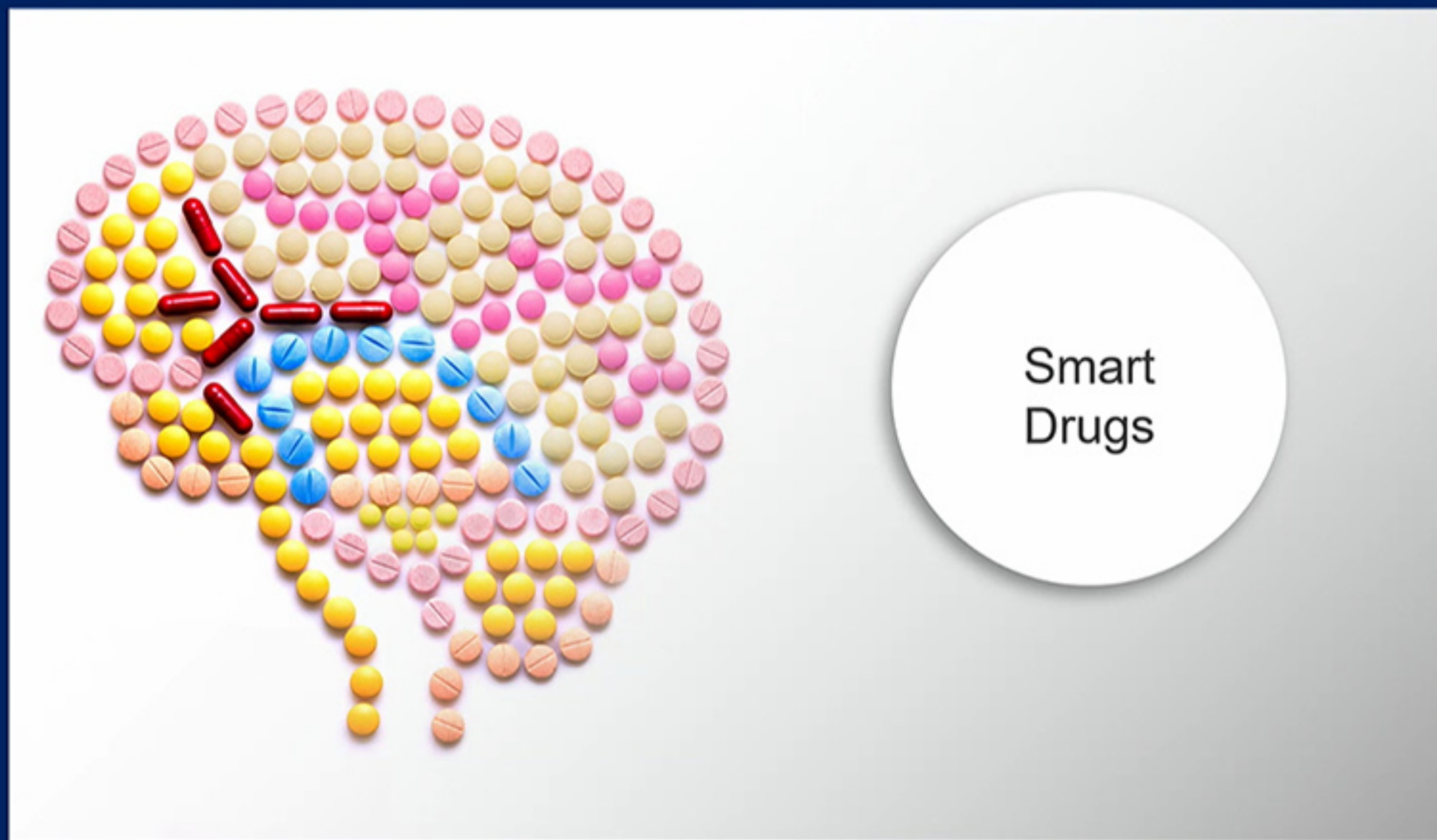
Collective swarm Intelligence



Deep Brain Stimulation



Brain-Computer Interfaces



Smart Drugs



WORLD
ECONOMIC
FORUM

The logo graphic consists of a white, stylized circular arc that is open at the top. It starts on the left side, curves upwards and around to the right, and then curves downwards to meet the bottom of the text.



Dennis M. Bushnell
 Chief Scientist
 NASA Langley Research Center



Future Strategic Issues/Future Warfare [Circa 2025]

- Capabilities of the “Enemy After Next”
 -Ongoing Worldwide Technological Revolutions

**The ‘Bots, ‘Borgs, ‘& Humans
 Welcome You to
 2025 A.D.**



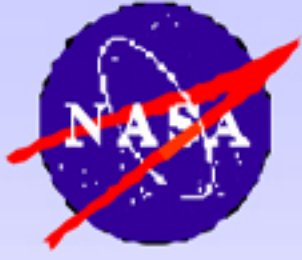
THIS PRESENTATION BASED ON “FUTURES” WORK FOR/WITH

- USAF NWV
- USAF 2025
- National Research Council
- Army After Next
- ACOM Joint Futures
- SSG of the CNO
- Australian DOD
- NRO, DSB
- DARPA, SBCCOM
- DIA, AFSOC, EB, AU
- CIA, STIC, L-M, IDA
- APL, ONA, SEALS
- ONI, FBI, AWC/SSI
- NSAP, SOCOM, CNO
- MSIC, TRADOC, QDR
- NGIC, JWAC, NAIC
- JFCOM, TACOM



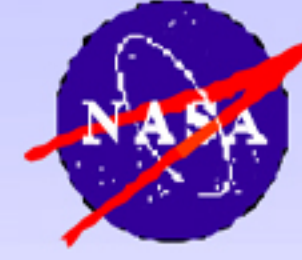
THIS PRESENTATION

- Is meant to incite thought/ discussion
- Is based in all cases upon existing data/trends/analyses/technologies (e.g., NO PIXIE DUST)
- Provides in some cases a somewhat broader view of prospective developments and issues



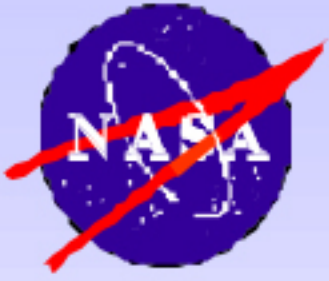
Humans Have “Taken Over” and Vastly Shortened “Evolution”

- **Of the Planet**
 - Global Warming/Pollution/Deforestation
 - Huge “Public Work” (e.g. 3 Gorges Dam)
- **Of the Human Species**
 - Genomic Design and Repair
 - “Mind Children” (Moravec)
- **Products/Life Forms**
 - Cross Species Molecular Breeding
 - “Directed Evolution” (Maxygen etc.)



Technological Ages of Humankind

- **Hunter/Killer groups [Million BC~10K BC]**
- **Agriculture [10K BC~1800 AD]**
- **Industrial [1800~1950]**
- **IT [1950~2020]**
- **Bio/NANO [2020-?]**
- **Virtual**



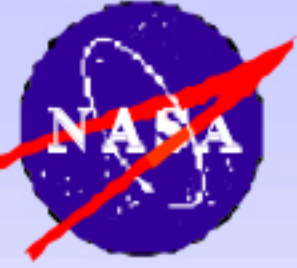
Some Sensor “Swarms”

- **SMART DUST**
 - Cubic mm or less
 - Combined sensors, comms and power
 - Floats in air currents
- **NANOTAGS**
 - Placed on everything/everywhere
 - Identification and Status Info
- **Co-opted INSECTS**



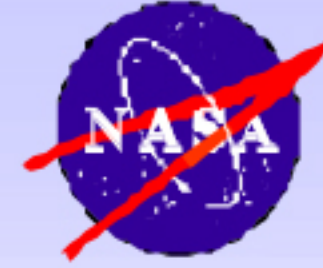
Inexpensive Motivational Asynchronous Web-Based Distance Education Enables:

- **Demise of the U.S. “underclasses”**
- **Wealth Creation from enabled “Invention”**
- **Stabilization of World Population**
- **[Even More] Rapid Technology Diffusion**
- **Equalization of “Haves” and “Havenots”**
- **Altered Political/military outlooks Worldwide**
- I.E. Changes “Everything”




Exploit “CNN Syndrome”

- Sink Carrier(s) via “swarm attacks”
- Capture/torture Americans in living color on prime time
- “Terror” attacks within CONUS (binary bio, critical infrastructure “takedown,” IO/IW, EMP, RF against Brain, etc.)
- Serious “Psywar” (collateral damage exploitation, etc.)

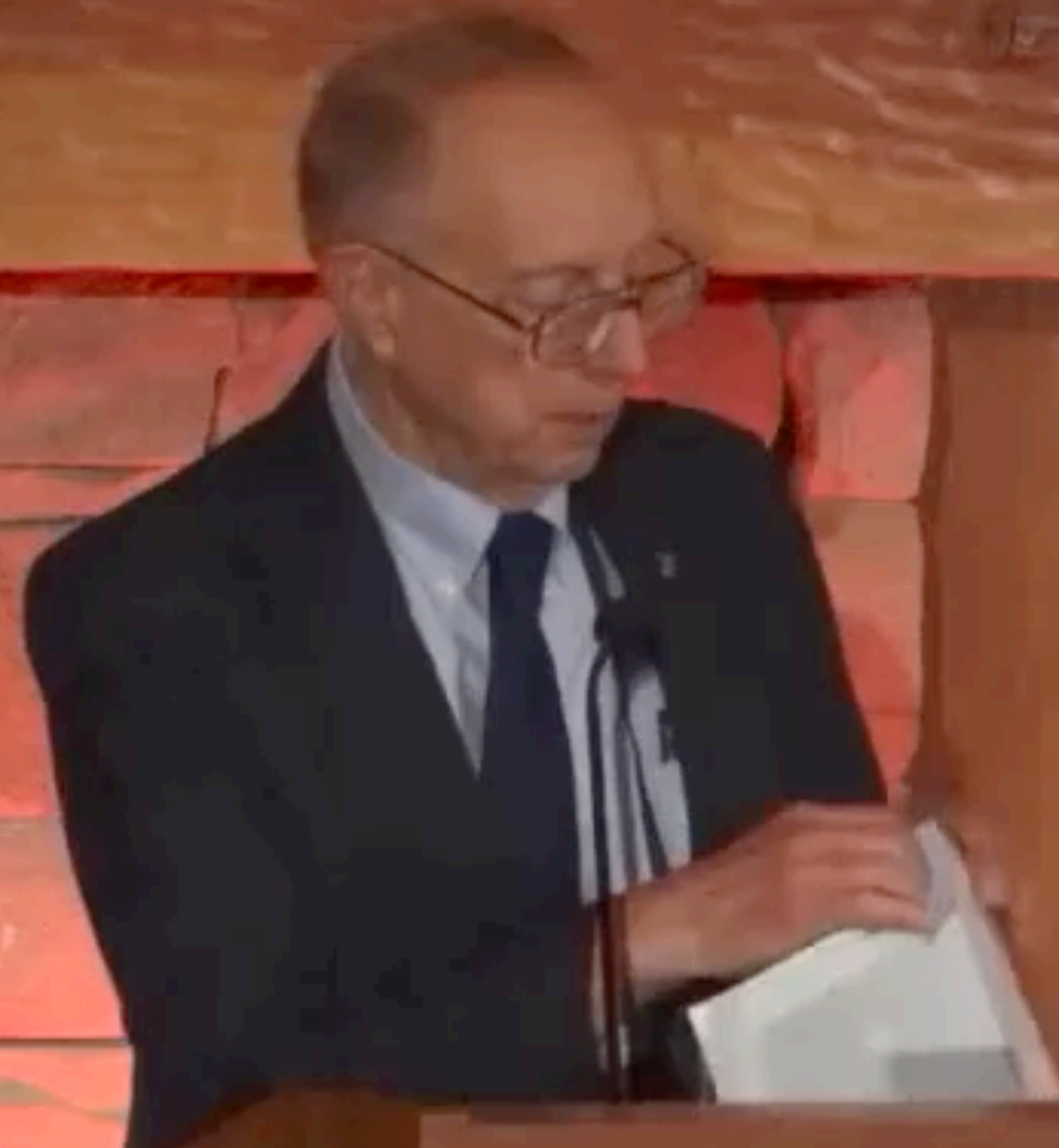


Example ‘Then Year’ Direct Conus Attack Capabilities

- [~80% of CONUS population/infrastructure within ~ 50 Miles of a “coastline”]
- Inexp. Transoceanic UUV’s/UAV’s/Cruise
 - Inexp. Blast Wave Accelerators
 - Inexp. Info/Net/Psywar
 - Inexp. Inshore AIP SS [mines/torps/SLCM]
 - Inexp. Binary Bio into Food Supply
 - Inexp. Semi-submerged Missile “eggs”
 - Inexp. ‘Trojan Horse’ “civilian” systems
[Above in addition to ICBM/TBM]



— From the 2011
Electric Aircraft Symposium
in
Santa Rosa, CA



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Disruptive Technologies and Their Putative Impacts Upon Society and Aerospace- Entering The Virtual Age

*Dennis M. Bushnell
Langley Research Center, Hampton, Virginia*

availability of truly massive amounts of information could, when combined with AI and under the mantra of “big data,” greatly improve many of our technical and commercial processes and their content including elucidating new heuristic governing laws.

The IT revolution will also accelerate the expansion of robotics’ capabilities, which are on a clear path to pervasive autonomous systems. The machines are rapidly supplanting humans in ever more areas of employment. They are proving to be more productive, less expensive, and—in a growing number of areas—more capable than humans.

The development of five-senses virtual reality is a major advance in human-machine communications that bodes well for accelerating the tele-everything trend. IT-enabled 3-D printing is rapidly changing the manufacturing landscape from central factories that employed humans to robotic home fabrication. This transition has potential major consequences for the field of aeronautics and space exploration in such areas as alternatives to transporting cargo and manufacturing using in-space resources.

What is evolving is a global brain, via the Web. When combined with manufacturing via on-site printing, this global brain is enabling a planet of inventors—both human and, increasingly, machine. The impacts are literally life changing and are occurring essentially simultaneously with many other societal issues including climate change and ecosystem degradation.

Most of the current rationale for commercial space development focuses on telecommunications, a major industry that is based upon exploiting space as the positional high ground. Other IT-enabled computational sciences—e.g., structures, materials, fluids, systems—constitute the design backbone of aerospace. Simulation technology is rapidly evolving into a virtual flight capability resulting in less physical testing and more computation. The number of wind tunnels and wind tunnel test hours is decreasing. Aerospace has, from its inception, been married to IT technologies, including for controls and navigation, communications, and design. More than 80% of safety issues in aeronautics are due to human factors. Autonomous flight would be expected to have a better safety record. The technical capability is in hand now—and will improve going forward—for autonomous flight for uninhabited air vehicles (UAVs) and eventually autonomous personal air vehicles (PAVs), or UAVs carrying passengers. The estimated markets for such robotic air vehicles are massive but require an autonomous air traffic control (ATC) system to realize. Many redundant, fail-safe IT technologies (e.g., sensors, navigation, communications, actuators/controls, machine intelligence, computers, software, etc.) are either here or on the horizon to produce an ATC system enabling millions of autonomous vehicles in controlled air space. Given such an ATC system, quiet vertical to short takeoff and landing (VSTOL) vehicles for human-sized and smaller-payload autonomous flight could operate off the street in front of an individual holding. Applications would include delivery, a wide variety of service and commercial functions and personal transportation, with an estimated worldwide market on the order of a trillion dollars per year, mostly from PAVs. (Ref. 5)



Last Updated: 7th August, 2022 23:00 IST

Elon Musk Says People Will Be 'blown Away' By Tesla Optimus Robot Set To Unveil On Sept 30

Elon Musk, during Tesla's annual shareholder meeting, also claimed that the Optimus robot will eventually become "more valuable than the cars".

Written By [Harsh Vardhan](#)



IMAGE : AP/TESLA



Image: AP/Tesla

Sat, Aug 13, 2022

U.S.

Elon Musk's Net Worth Rose 600 Percent to 175 Billion During the Pandemic

BY [SAMANTHA LOCK](#) ON 8/26/21 AT 8:24 AM EDT



[U.S.](#) [ELON MUSK](#) [CORONAVIRUS](#) [BILLIONAIRES](#)

Elon Musk saw his net worth increase by a staggering \$150 billion during the COVID-19 pandemic, a gain of over 600 percent, according to a new report.

The [SpaceX](#) and [Tesla](#) CEO is now the second-wealthiest American with an eye-watering \$170 billion fortune.

Despite the U.S. economy reeling from an unprecedented unemployment crisis with millions of Americans out of work, Musk enjoyed a meteoric rise, in part, attributed to the success of technology giants that emerged stronger than ever.

The 50-year-old made the additional \$150 billion from the start of the COVID-19 crisis on

Tech Industry

SpaceX signs a deal to rocket military cargo around the world

The Air Force wants to move more of its logistics into space.

Eric Mack
 Jan. 20, 2022 4:30 p.m. PT

2 min read



Rendering of a SpaceX Starship in flight.
 SpaceX

BLACKJACK NETWORK

The US military is working on a secretive network of spy satellites codenamed Blackjack that will blanket Earth's orbit.

- Will form mesh network of satellites
- Will be 'cheap' alternative to current spy sats
- Launches to begin in late 2020
- 20 satellites in orbit by 2022



Tech > Science

SKY NET Darpa is about to launch US military 'satellite space swarm' just like Elon Musk's Starlink

Harry Pettit, Senior Digital Technology and Science Reporter
 16:52, 13 May 2020 | Updated: 16:53, 13 May 2020



A man in a dark suit and glasses is speaking at a podium. The podium has a sign that reads "BlueTech FORUM" and "SPONSORED BY" with logos for "AMERICA'S" and "Q". The background is a dark wall. In the foreground, there are several red chairs and a potted plant on the left.

**BlueTech
FORUM**

Keynote: Dennis Bushnell, NASA

www.BlueTechForum.com



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NASA Ames



Oct 23, 2019

Google and NASA Achieve Quantum Supremacy

Google, in partnership with NASA and Oak Ridge National Laboratory, has demonstrated the ability to compute in seconds what would take even the largest and most advanced supercomputers thousands of years, achieving a milestone known as quantum supremacy.

“Quantum computing is still in its infancy, but this transformative achievement rockets us forward,” said Eugene Tu, center director at NASA’s Ames Research Center in California’s Silicon Valley. “Our missions in the decades to come to the Moon, Mars and beyond are all fueled by innovations like this one.”

Quantum computing is the study of how to harness the unique properties of quantum mechanics to solve certain types of problems far faster than on traditional computers. Potentially, NASA could one day use these techniques to support space missions, with quantum optimization making mission schedules more efficient and quantum simulation supporting the design of light and robust materials for modern spacecraft – just to name a few applications. This milestone is the first step toward that future.

“Achieving quantum supremacy means we’ve been able to do *one* thing faster, not everything faster,” said Eleanor Rieffel, co-author on the paper on this result, [published today in *Nature*](#), and the Quantum Artificial Intelligence Laboratory Lead at Ames. “And even though that one thing isn’t terribly useful, that it has been done at all is groundbreaking.”

The paper describes the experiments run by Google’s Sycamore quantum processor to demonstrate quantum supremacy. Computations on a quantum computer are called “quantum circuits.” These computer science abstractions work like programs, specifying a series of operations for the quantum processor

The Metaverse

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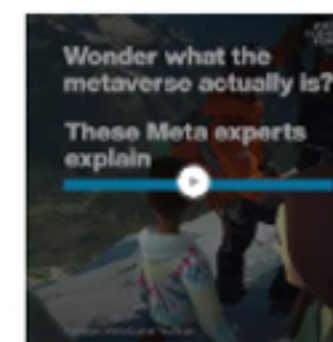
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Defining and building an open and inclusive metaverse

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DISCOVER

The Metaverse, Explained





THE ANNALS SIGHTS AND SOUNDS OF THE BOHEMIAN GROVE



ABC

5:51:10

JUL 23 81



At the close of the high jinks the ceremony of the Cremation of Care is solemnized, and it is not easy to conceive of a more solemn ceremony. On the top of the hill in the rear of the high jinks' stage are gathered those who are to participate in the cremation, and when the Sire declares the high jinks closed he requests the audience to remain seated, and the signal is given for the procession to move. The band, playing the Dead March, is followed by the High Priest and the bearers of the casket containing the remains of Care. Then comes the procession bearing torches, and as they descend the winding pathway, lighted by varied colored lights, it is certainly one of the most solemn sights ever witnessed, for nowhere else could be seen such magnificent surroundings.

As the procession passes the audience they all fall in and proceed to the ravine where the funeral pyre has been erected, and after marching twice around the pyre, the casket is then deposited thereon, the band plays a dirge, and the Master of Ceremonies delivers a short funeral oration. Then comes the High Priest with his address, closing with the soul-stirring announcement that carking care is conquered and Bohemia is free. Then come the torch bearers to apply their torches and soon the whole catafalque is ablaze, and as the burning blocks fall asunder, the fireworks in the casket then burst forth, a magnificent display of rockets, bombs and Roman candles brilliantly lighting up the ravine and all its surroundings.

The order is then given to "fall in" and all march back

to camp, and soon the gong sounds for supper, and here again all is jollity and mirth, which usually lasts until half past one in the morning. Then all gather for the low jinks, and an agreeable surprise awaits every one save and except those who have taken part in the rehearsals. This part of the entertainment generally closes about three A. M., and then follows the afterglow, which winds up eventually. I have dilated upon the ceremony of the Cremation of Care at greater length than I otherwise intended for the reason that I am Perpetual High Priest of Bohemia, a distinguished honor which I most highly appreciate.

Among the midsummer high jinks at which I have officiated as High Priest were several upon which I should love to dilate—the Buddha Jinks, held in the redwoods back of Mount Tamalpais, and sired by the late Fred M. Somers; the Druid Jinks, sired by J. D. Redding; the Aztec Jinks, sired by Louis A. Robertson; and the Hamadryad Jinks, sired by Dr. Shiels. But I also remember with delight some earlier midsummer jinks, less pretentious but none the less impressive in their own solemn way.

One of my birthdays occurred on Easter Sunday, and in honor of the event the club gave a birthday breakfast in the Red Room of the club, and at the close of President Horace Platt's eloquent address he presented me with a wonderful Easter egg as a token of the estimation in which I was held by the members. It was a large





blake