Army
Science & Technology

National Defense Industrial Association

Michigan Chapter
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National Defense Industrial Association

Technology Opportunities and Challenges

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NDIA

6TH ANNUAL DISRUPTIVE TECHNOLOGIES CONFERENCE
"Expanding Blue Force Capability"

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ARMY SCIENCE AND TECHNOLOGY
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WWW.NDIA.ORG/MEETINGS/9920

Predicting the Future

It's tough to make predictions, especially about the future. Some famous technology predictions include:

- *"Heavier-than-air flying machines are impossible."*
  - *Lord Kelvin, 1895*
- *"Airplanes are ...of no military value."*
  - *Marshal Ferdinand Foch, 1911*
- *"Who ... wants to hear actors talk ?"*
  - *H. M. Warner, 1927*
- *"... (T)here is world market for maybe five computers."*
  - *T. Watson, IBM Chairman, 1943*
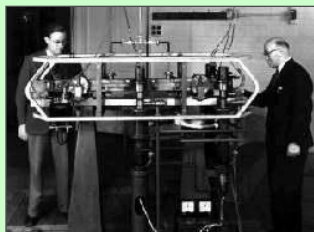- *"640k (RAM) ought to be enough for anybody."*
  - *Bill Gates, 1981*

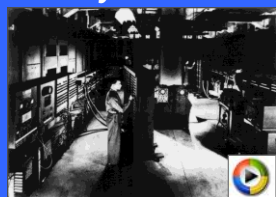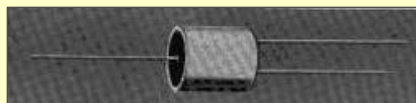# Disruptive Technologies

Decade of the 1950's

Lasers

Atomic Clock

Programmable Systems

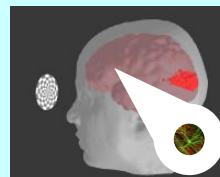**WWII Ballistic Computing/ ENIAC**

Transistor

DNA

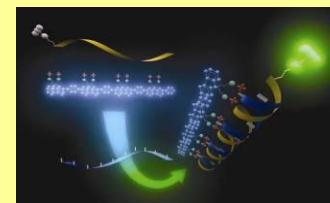## Today for 2020 and beyond…

Functional Brain Imaging & Beyond

Robotics

Nano-technology

NETWORK SCIENCE

Network Science

Quantum Computing
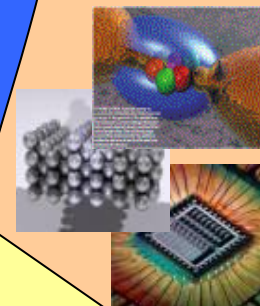
Immersive Environments

Bio-technology
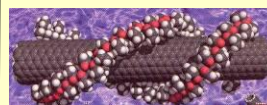
Future Army Soldier—1956

Laminated steel and plastic helmet

Radio transceiver inside helmet

Plastic armor choker

Plastic armor tunic (zippered on the sides and bottom with overlapping shielding at fastened points)

Ammunition pouches

Throat microphone and chin strap

Pocket for cigarettes or personal items

Emergency Rations

Ammunition

"Army Magazine" Vol 56. No.11 p.38, November
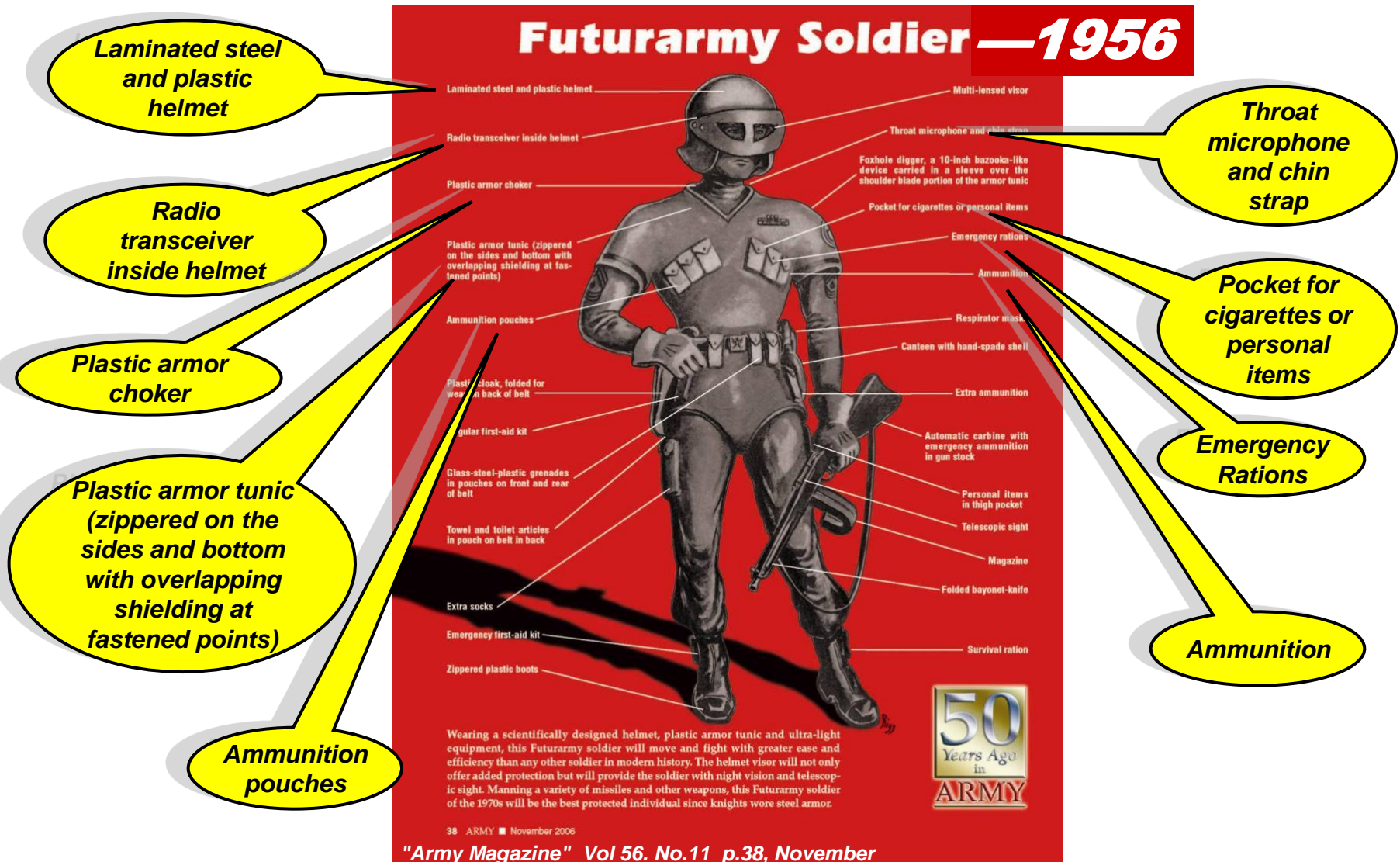
Soldier—2020

Lift Five Tons

Develop new polymers that produce force 100 times that of a natural muscle

Wield Any Weapon

Variety of manipulators that enable handling of complex weapons

Walk Into Bullets

Although an exoskeleton could support heavier armor, a lower weight solution is in the works

Run Like an Olympian

Motion similar to the way we walk

Heal Wounds Automatically

Sensor and smart suit that would detect and treat injuries
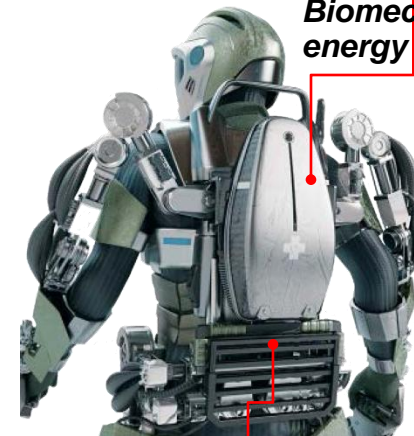
Monitor Systems Status

Helmet mounted display

Change Functions Immediately

Suit that tailors efficiency for type of activity -- short sprints or long distance walks

Power Itself

Biomechanical energy creation

Evacuate Anyone

Fold down platform that injured soldiers could sit on so that they can be carried out

Popular Science May 2008 Issue

Major Trends Affecting Future Systems

- *Computers will almost disappear and be embedded in everything*
- *Further advances will be made in light-emitting devices that are highly efficient and printable*
- *Very complex robotic systems will be developed to think, learn, and perform human and non-human tasks faster and better*
- *Nanotechnology, Biotechnology, and Miniaturization will lead to major advances in medicine, manufacturing and the environment*
- *Virtual environments will be indistinguishable from reality*
- *We will understand how the human brain works*

Army S&T...
Engine of Transformation