Artificial Intelligence (AI) For Defense and Military Use

Capers Jones **Draft 1.0** **November 4, 2023**

(Picture of an Ai-piloted aircraft generated by artificial intelligence)

ABSTRACT

Artificial intelligence (AI) is a new technology that is changing many fields. One of these is the way military equipment will be operated. Instead of human pilots, new aircraft will be controlled by artificial intelligence. There are also AI submarines without crews, and AI-controlled battle tanks. This article shows recent examples of AI-designed and operated military equipment.

Note: The AI tool Google Bard was used for fact checking in this draft. Many of the illustrations were produced using artificial intelligence. As of 2023 AI-generated illustrations cannot be copyrighted. This means that new books using AI-generated illustrations will have many more illustrations than older books on the same topics.

ARTIFICIAL INTELLIGENCE FOR DEFENSE AND MILITARY USES

INTRODUCTION

One of the most important uses of AI will be for military and defense activities. The United States, China, Russia, and all other countries are building new generations of AI controlled aircraft, ships, spaceships, tanks, and other weapon systems. This could greatly reduce casualties in warfare and military actions.

Computer-controlled pilotless military aircraft and drones have added new capabilities to world military forces. They can fly dangerous missions without risking loss of pilots.

Current use is mainly reconnaissance over hazardous terrain and at sea over enemy surface ships. They can also be used as cruise missiles with high-precision accuracy to minimize risks of collateral damages to innocent bystanders.

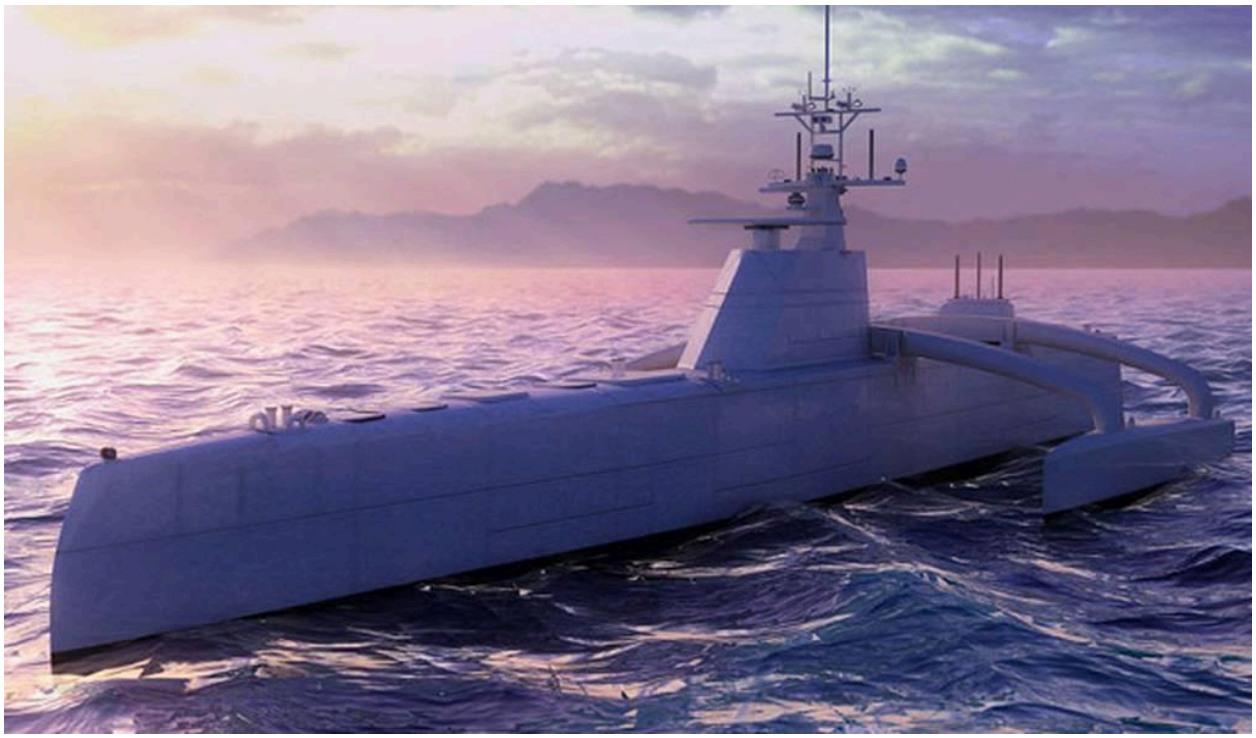
Following is a picture of a small AI-controlled surface ship:

The next picture shows a new AI-guided ship for hunting enemy submarines:

Computer controlled surface ships, tanks, and other military equipment are now being planned and some are under construction. The Air Force has already carried out an experimental dogfight between two computer-controlled aircraft.

The next picture shows a new Navy AI-controlled submarine:

There are several kinds of AI-controlled submarines for both attack and reconnaissance purposes:



AI is one of the most important technologies ever developed for defense and military purposes. Within a few years thousands of drones, pilotless aircraft, tanks, and other vehicles will be controlled by artificial intelligence instead of human beings.

Future aircraft carriers will have both piloted aircraft and AI-controlled aircraft:

The next two pictures show the designs of new Russian aircraft carriers:

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Here is a second Russian aircraft carrier design:

China is also designing new aircraft carriers for AI-controlled planes:

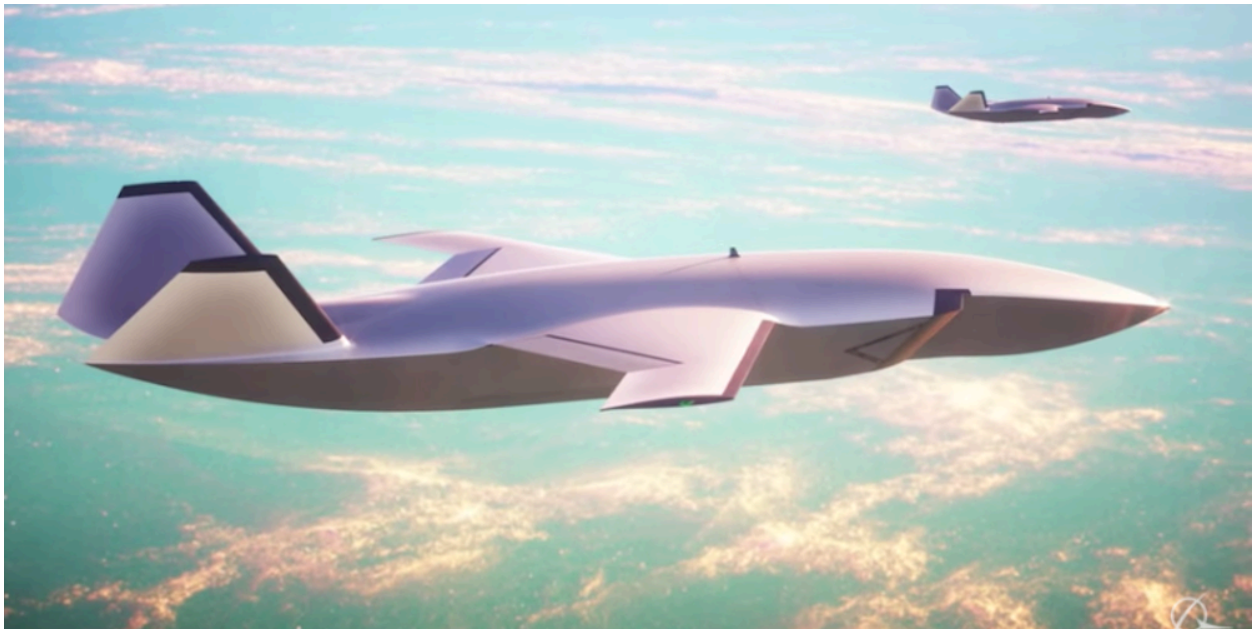
Boeing in developing the concept of a flying aircraft carrier for use over land that can carry AI-piloted aircraft:

The final picture is also of an AI-designed aircraft carrier:

The final navy picture shows a new aircraft carrier designed with artificial intelligence and using AI for defensive systems:

The next picture shows a new F35 fighter designed by artificial intelligence and piloted by artificial intelligence.

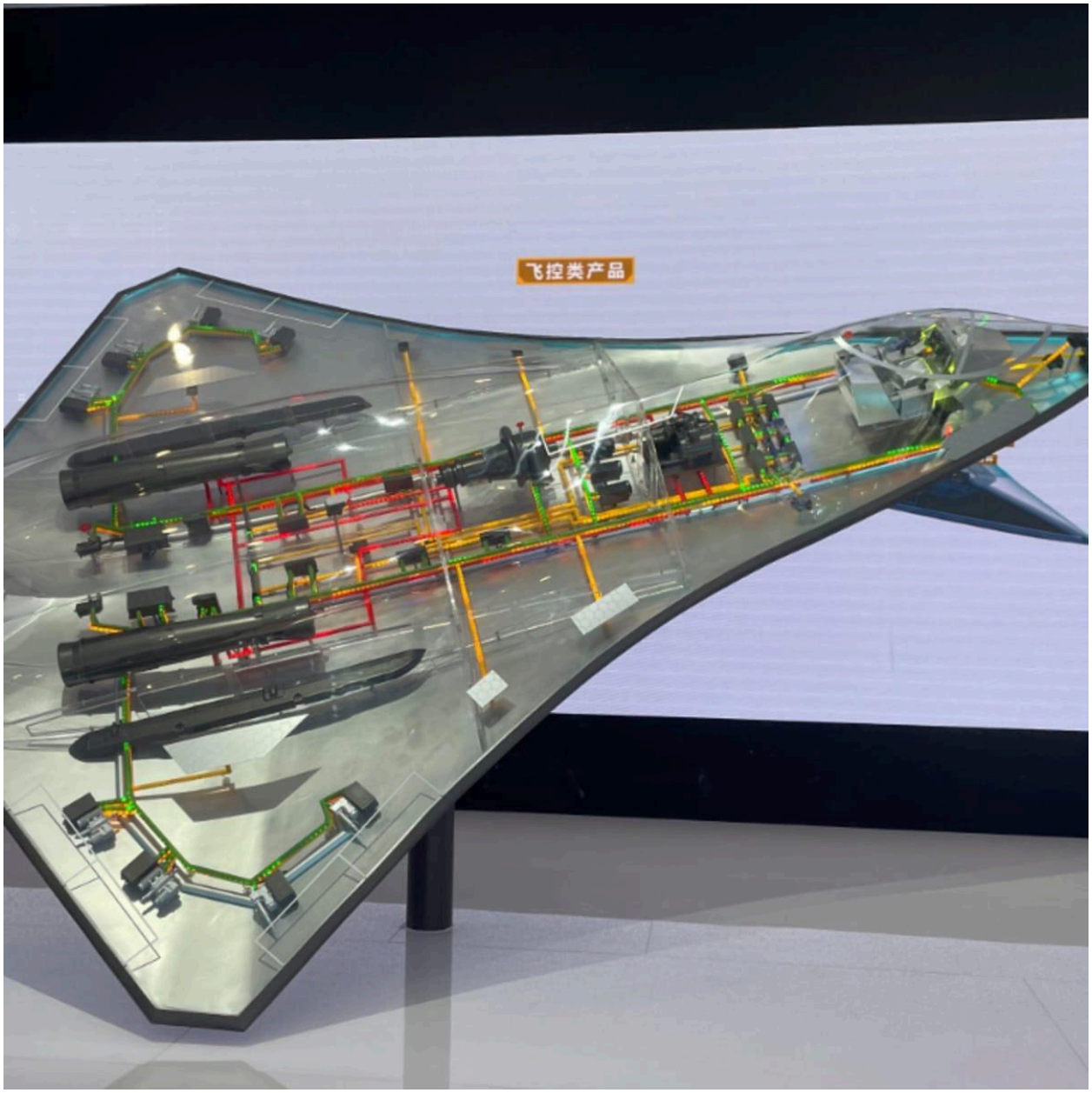
The next picture shows a new Boeing design called “Loyal Wingman” for air combat:



The next picture is of a reconnaissance flying wing that can photograph from high altitudes and send back information without risk to humans:

The most advanced military aircraft can fly in space and go around the world:

The next picture shows an AI-designed and piloted fighter in the Chinese Air Force:



The next picture shows a Chinese helicopter they are exporting to Iraq and other countries:

The next picture shows a Chinese stealth drone:

The next picture is a Russian AI-piloted plane called Stealth Felon:

Some existing Russian planes are adding AI-piloting for future models such as the SU=57:

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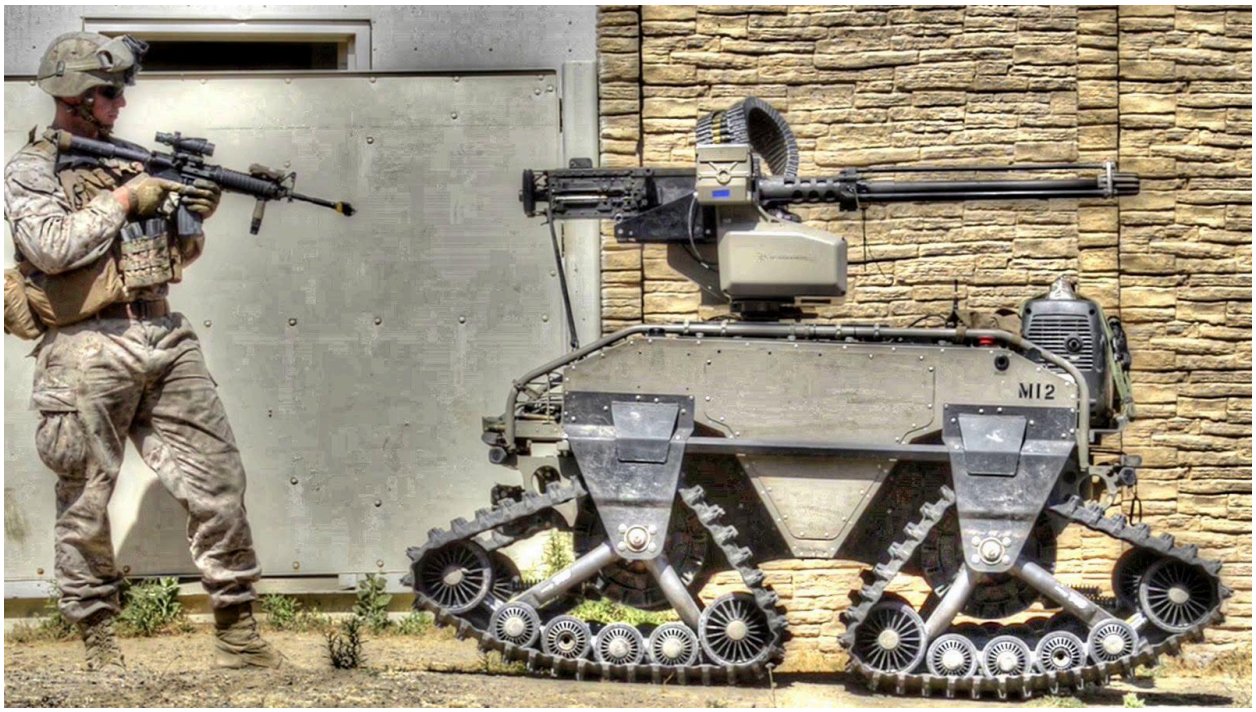
The future of military aviation in all countries will be dominated by AI from now on.

Moving to ground forces, a military picture shows an AI-controlled main battle tank firing a cannon at a target:

The next generation of tanks will be AI controlled as shown by the following picturs:

Following is another picture of a new AI-controlled tank for air defense:

The next picture shows a small AI-controlled tank for close fighting on battle fields and for sciytubg without risking human lives:



Within a few years the military will have AI-controlled aircraft, battle tanks, cargo carriers, drones, long-range missiles, spaceships, surface ships, and submarines.

Small driverless transport vehicles already exist and can be used to resupply frontline troops:

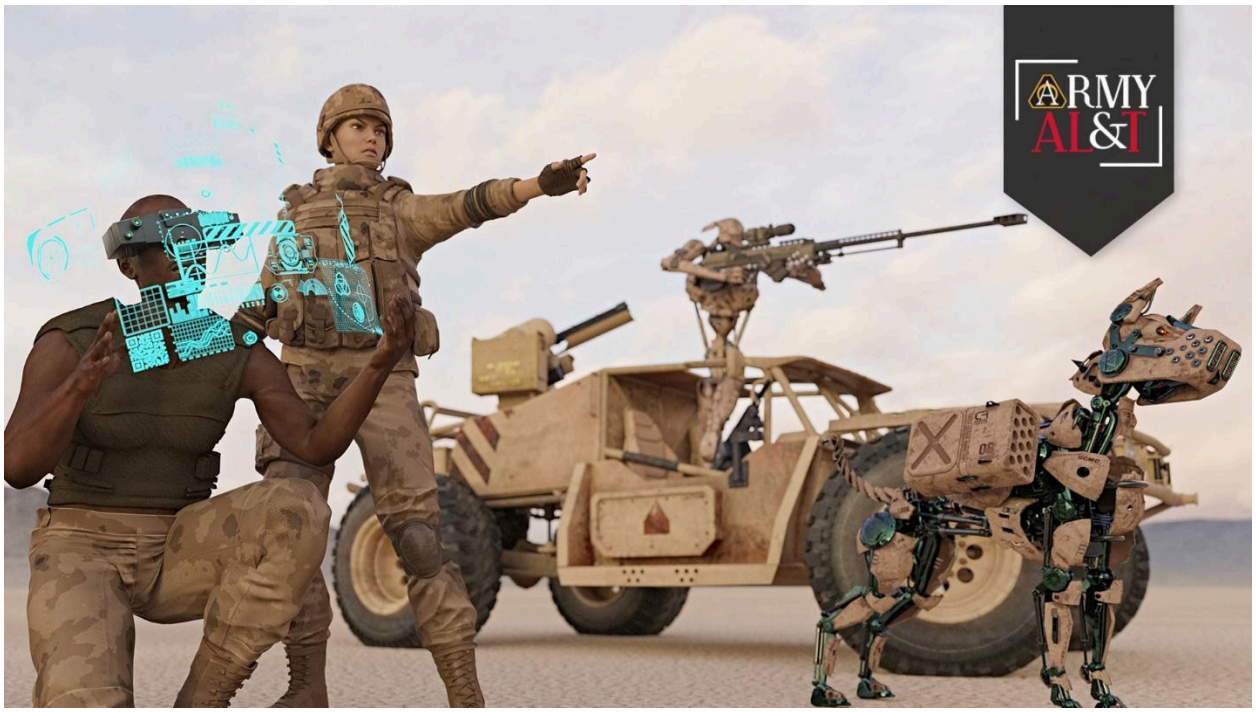
Next is a photo of an Iranian drone tank controlled by artificial intelligence:

AI is transforming all aspects of defensive systems: ground, air, sea, and undersea.

Here is another image of a future tank design:

Without human crews to need armor protection, some future tanks will be light enough to fly:

Here is an image of a soldier advancing beside an AI-controlled tank and accompanied by an AI-controlled scout dog:



Next are pictures of military drones flying over a battlefield:

Next is a picture of a drone on the ground being adjusted before its next mission:

Next is a picture of a future battle fought with AI-controlled aircraft and tanks but very few actual soldiers:

Summary of the Impact of Artificial Intelligence on Defense and Military Uses

AI is already creating pilotless aircraft, crewless submarines and surface ships, and AI-controlled battle tanks. There are also AI-controlled guided missiles, and even AI spaceships. Today ships, aircraft, and tanks are almost 100% controlled by humans. Within 10 years the percentage of human crews should drop by over 50%. Within 25 years the percentage of human crews may drop by over 75%.

RECENT REPORTS AND ARTICLES ON ARTIFICIAL INTELLIGENCE

Five Ways Artificial Intelligence will Change the World	NBC News 2023
The Future of AI's Impact on Society	MIT Technology Review 2023
How Will AI Impact the Future of Work	Forbes 2023
Artificial Intelligence News	Science Daily 2023
Artificial Intelligence (AI) Technology	The Guardian 2023
Artificial Intelligence	BBC News 2023

BOOKS ABOUT ARTIFICIAL INTELLIGENCE

The McGraw Hill Illustrated Encyclopedia of Robotics and Artificial Intelligence, McGraw Hill 2022.

Fundamental of Artificial Intelligence: Problem Solving and Automated Reasoning; Miroslav Kubert, McGraw Hill, 2023

The Essence of Artificial Intelligence; Alison Crowly, Prentice Hall; 2023

Philosophy & Artificial Intelligence; Todd C. Moody; Prentice Hall 2023

Artificial Intelligence: A Modern Approach; Stuart Russel and Peter Norvig; Pearson; 2022

READINGS ON HISTORICAL TOPICS THAT TRANSFOMED AMERICA

Starr, Paul; The Social Transformation of American Medicine; Basic Books; Perseus Group; 1982; ISBN 0-465-07834-2. **NOTE: This book won a Pulitzer Prize in 1982 and is highly recommended as a guide for improving both professional education and professional status. There is much of value for the software community.**

Strassmann, Paul; Information Payoff; Information Economics Press, Stamford, Ct; 1985.

Strassmann, Paul; Governance of Information Management: The Concept of an Information Constitution; 2nd edition; (eBook); Information Economics Press, Stamford, Ct; 2004.

Strassmann, Paul; Information Productivity; Information Economics Press, Stamford, Ct; 1999.

Weinberg, Gerald M.; The Psychology of Computer Programming; Van Nostrand Reinhold, New York; 1971; ISBN 0-442-29264-3; 288 pages.

Weinberg, Gerald M; Becoming a Technical Leader; Dorset House; New York; 1986; ISBN 0-932633-02-1; 284 pages.

Yourdon, Ed; Death March - The Complete Software Developer's Guide to Surviving "Mission Impossible" Projects; Prentice Hall PTR, Upper Saddle River, NJ; ISBN 0-13-748310-4; 1997; 218 pages.

SAMPLE OF 10 PUBLISHED BOOKS BY CAPERS JONES

NOTE: a new book by Capers Jones on Artificial Intelligence is planned for publication in 2024. It will be about 300 pages in length and have about 300 AI-generated illustrations. Capers Jones has published 20 books between 1978 and 2023.

1. Software Development Patterns and Anti-Patterns; Taylor Francis, 2022

2. Software Assessments, Benchmarks, and Best Practices; Addison Wesley Longman, Boston, Ma; 2000

3. The Year 2000 Software Problem, Addison Wesley Longman, Boston, MA; 1998.

4. Software Quality – Analysis and Guidelines for Success (International Thomson Computer Press; Boston, MA; 1997).

5. Patterns of Software System Failure and Success; International Thomson Computer Press: Boston, MA; 1995).

6. Assessment and Control of Software Risks; Prentice Hall, Englewood Cliffs, NJ; 1994.

7. Applied Software Measurement; McGraw Hill, 1991

8. Programming Productivity: Steps Toward a Science; Prentice Hall, 1993

9. Software Quality Today; IBM Corporation; 1978

10. Software Engineering Best Practices; IBM Corporation 1978

SAMPLES OF 10 JOURNAL ARTICLES BY CAPERS JONES

Capers Jones has published more than 250 journal articles between 1978 and 2023 in magazines such as Scientific American, IBM Systems Journal, Datamation, Crosstalk, IEEE Transactions on Software Engineering, Cutter Software Journal, and others. This list primarily shows a sample of articles about risks.

1. "High Efficiency Defect Removal Efficiency"; IEEE Software; August 2019

2. "Challenges of Software Project Management"; IEEE Computer; June 2017"

3. "Corporate Software Risk Reduction"; ITT Journal; August 2016

4. "Defenses Against Software Litigation"; IEEE Computer; March 2015

5. "Quality Control for Embedded Software"; IEEE Computer, May 2009.

6. "Preventing Software Failure: Problems Noted in Breach of Contract Lawsuits"; U.S. Air Force software journal *Crosstalk*, June 2008.

7. "Software Defect Potentials"; Crosstalk, Air Force Technology Support Center; December 2007

8. "The Evolution of Defense Software"; *Crosstalk*; Air Force Technology Support Center; November 2004

9. "Conflict and Litigation between Software Clients and Developers"; IEEE Computer; April 2001.

10. "Analysis of Damages due to the Y2K Problem"; IEEE Software; December 2000.

SAMPLE OF 25 OF CAPERS JONES GOVERNMENT CLIENTS

The author was an international consultant for IBM and still consults for his own company, Namcook Analytics. In total the author has consulted with over 95 government agencies and has recently has added the Government of Japan and the State of Florida for artificial intelligence. This table shows a sample of 25 government clients out of 95:

1. Atomic Energy Commission (AEC)
2. Department of Defense (DoD)
3. Deutsche Post (Germany)
4. Homeland Security
5. Internal Revenue Service (IRS)
6. National Aeronautics and Space Administration (NASA)
7. National Security Agency (NSA)
8. U.S. Airforce
9. U.S. Courts (expert witness)
10. U.S. Navy Surface Weapons
11. Government of Canada
12. Government of Hong Kong
13. Government of Japan (artificial intelligence)
14. Government of Malaysia
15. Government of Singapore
16. Government of South Korea
17. Government of Quebec
18. Government of Thailand
19. State of California
20. State of Florida (artificial intelligence)
21. State of New York
22. State of Oregon
23. State of Pennsylvania
24. State of Rhode Island
25. State of South Carolina

SAMPLE OF 25 OF CAPERS JONES CORPORATE AND ACADEMIC CLIENTS

The author has consulted with over 95 corporate and university clients.

1. American Airlines
2. Amdahl
3. American Express
4. Apple
5. AT&T
6. Bank of America
7. Boeing
8. Dunn & Bradstreet
9. Dupont
10. Ford
11. General Motors
12. Grumman
13. Hartford Insurance
14. Harvard University
15. IBM
16. McKinsey Consulting
17. Microsoft
18. MIT
19. Mobil Oil
20. Nippon Electric
21. Raytheon
22. Walt Disney
23. Wells Fargo
24. Westinghouse
25. Xerox

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