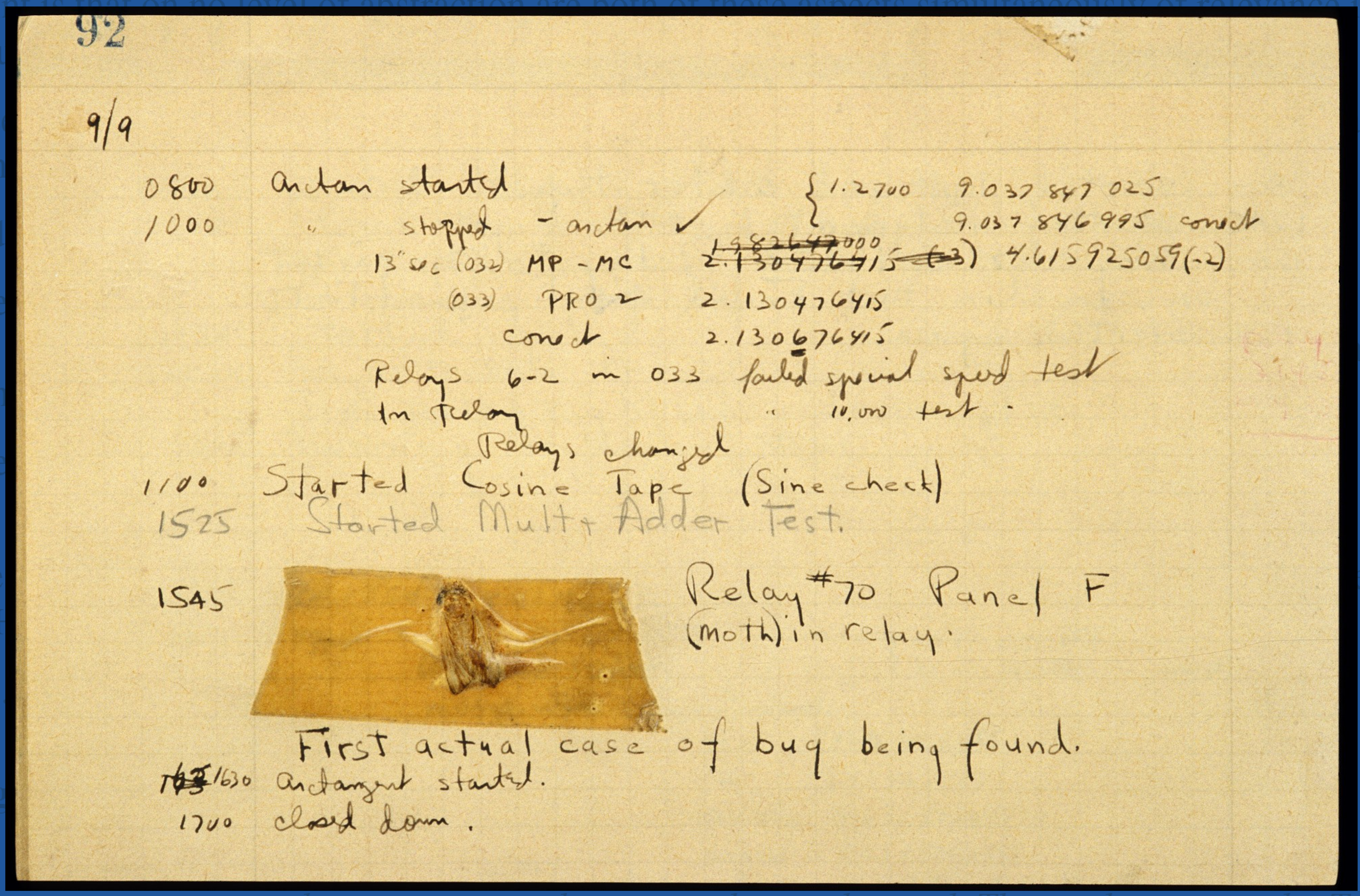
Engineering culture

Programming is an applied science of engineering. Engineers emphasize well-documented and rigorous methods and practices, develop and adhere to codes of ethics, and invest in tools that support their work.

Choosing terminology: Bug or failure?

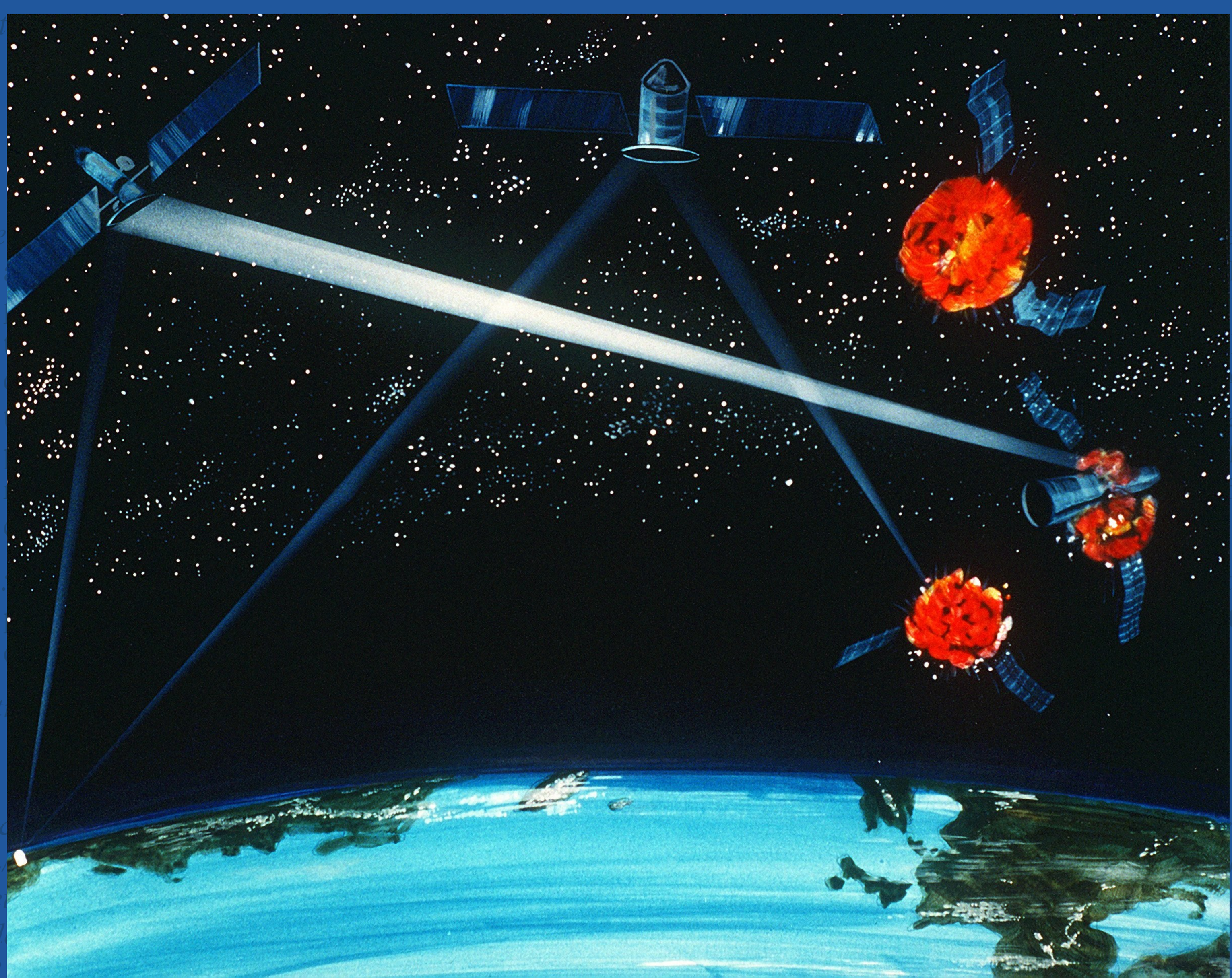


First actual case of a bug being found (1947)

By using the term bug rather than failure, engineers suggest that the errors are small and easy to correct. This is in stark contrast with the $300bn spent on fixing the "Y2K bug".

The nature and limitations of software

The development of the U.S. Safeguard antiballistic missile system required a new engineering language to answer the question: Can such a software system be reliably built?



Joseph Weizenbaum (1969)

Computer systems can only become reliable if "the environment that they are to control or with which they are intended to cooperate has a change rate smaller than that of the computer system itself."

Greg Nelson and David Redell (1984)

"Since we have no spare planets on which to fight trial nuclear wars, operational testing of a global anti-ballistic missile (ABM) system is impossible."

Pivotal events: Revolutions or evolution?

Key moments in the history of the engineering culture often hide more complex historical developments.

NATO Software Engineering Conference (1968)

The term "software engineering" is born and everyone agrees on the problems faced by the growing industry, but there is little agreement on the right path forward.

Manifesto for Agile Software Development

We are uncovering better ways of developing software by doing it and helping others do it. Through this work we have come to value:

Individuals and interactions over processes and tools
Working software over comprehensive documentation
Customer collaboration over contract negotiation
Responding to change over following a plan

That is, while there is value in the items on the right, we value the items on the left more.

The Agile Manifesto, Snowbird meeting (2001)

Captured but also simplified engineering values that were developed over the preceding decade, drawing from ideas such as Scandinavian participatory design.