



7 BILLION PEOPLE

200 COUNTRIES

ALL PRODUCING DATA

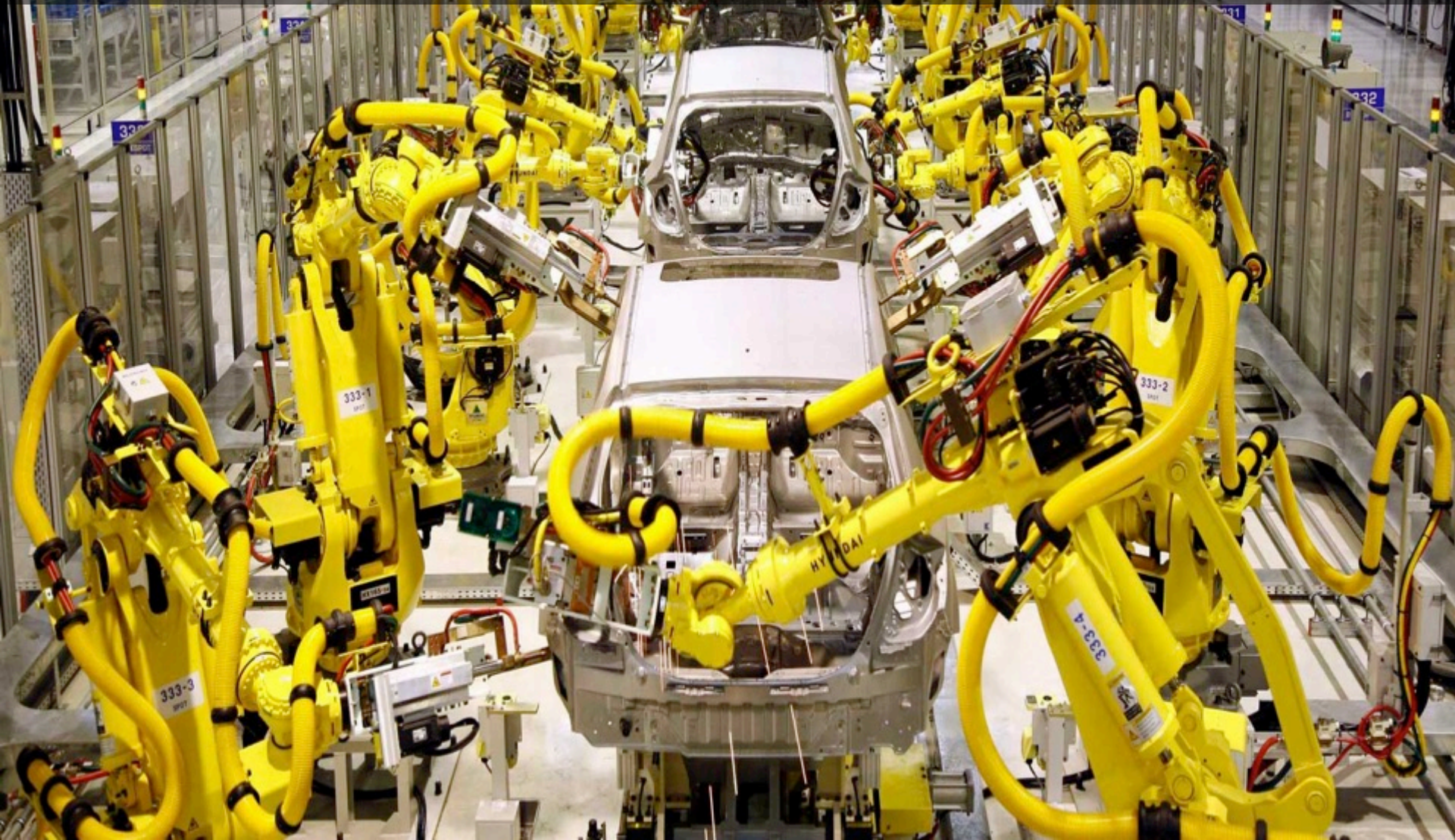
Engineering Computation
& Data Science

Abel Sanchez, abel@mit.edu, John R Williams, jrw@mit.edu
Massachusetts Institute of Technology

Rise of Systems & Data

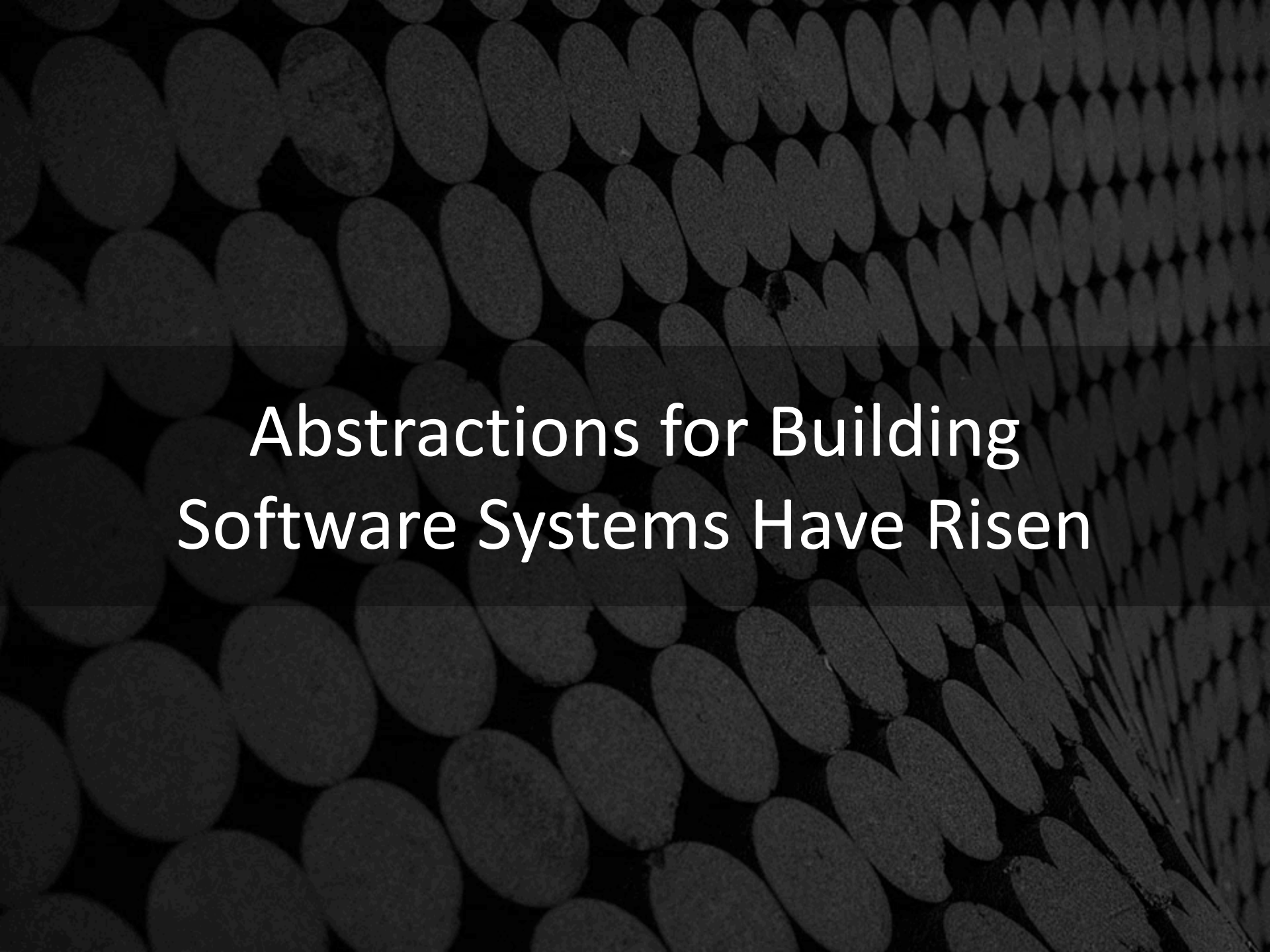


More Systems & More Data





Everywhere



Abstractions for Building Software Systems Have Risen

A person wearing a white helmet, dark jacket, and orange gloves is walking on a snowy mountain peak. The background shows a vast, rugged mountain landscape under a cloudy sky. The text is overlaid on a semi-transparent dark band across the middle of the image.

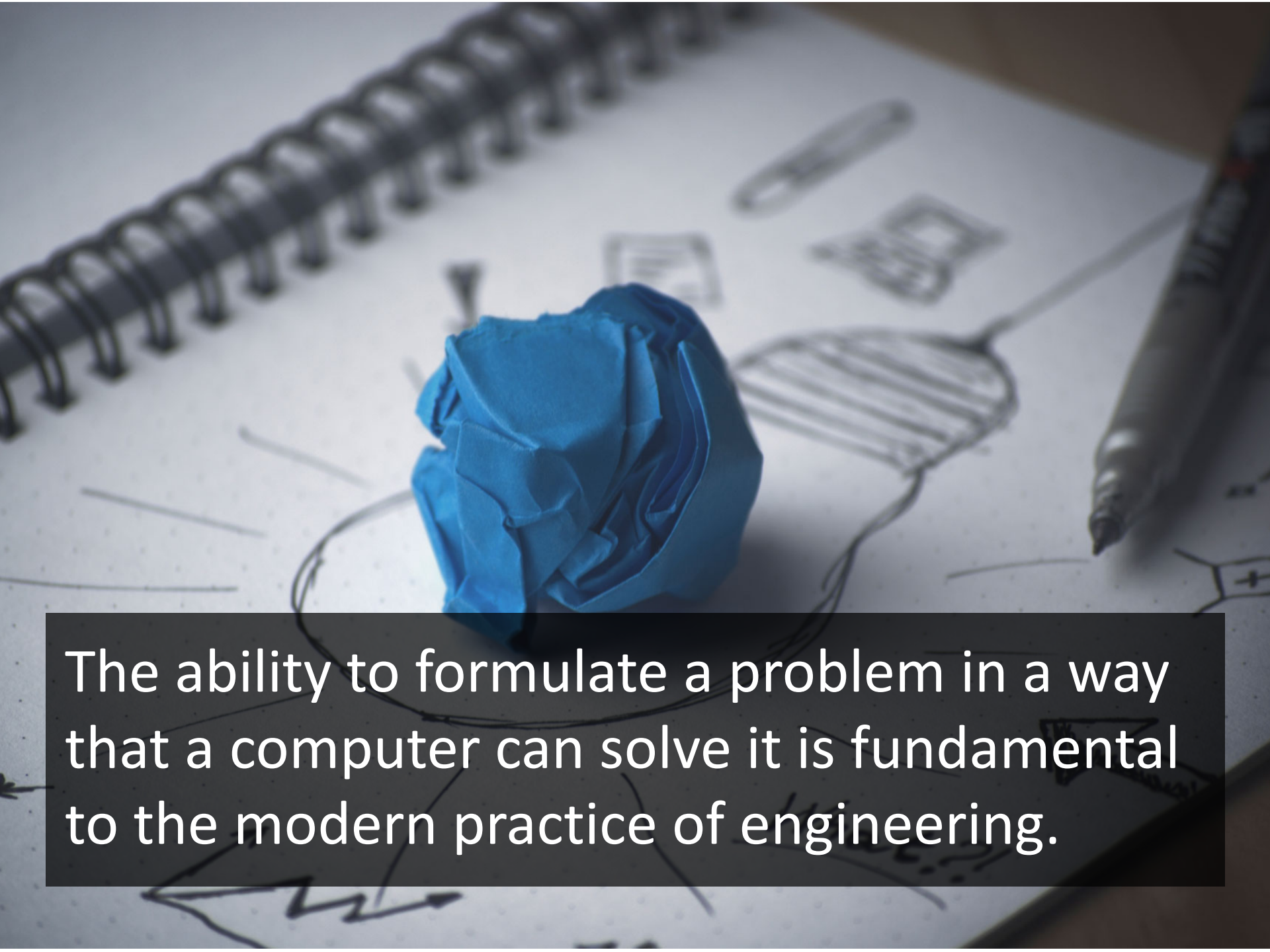
New normal: A Single Person can
Build a Complex Software System

New normal: A Small Team can
Challenge an Industry

A New Challenge for All

A person wearing a pink shirt, black shorts, and a green helmet is climbing a steep, light-colored rock face. The climber is positioned on the left side of the frame, facing away from the viewer. The background is a clear blue sky with a bright sun in the upper right corner, creating a lens flare effect. A dark blue rectangular box is overlaid on the bottom right of the image, containing white text.

Challenge: develop the ability to conceptualize and represent problems in a way that a computer can solve.

A crumpled blue paper ball sits in the center of a spiral-bound sketchbook. The sketchbook page is filled with faint, hand-drawn sketches, including a large oval with horizontal lines, a rectangular box, and various arrows and geometric shapes. A black pen lies on the right side of the page. The background is slightly blurred, emphasizing the crumpled paper ball.

The ability to formulate a problem in a way that a computer can solve it is fundamental to the modern practice of engineering.



Posing your idea in terms of computation is much more than being able to program a computer. It requires thinking in terms of systems.

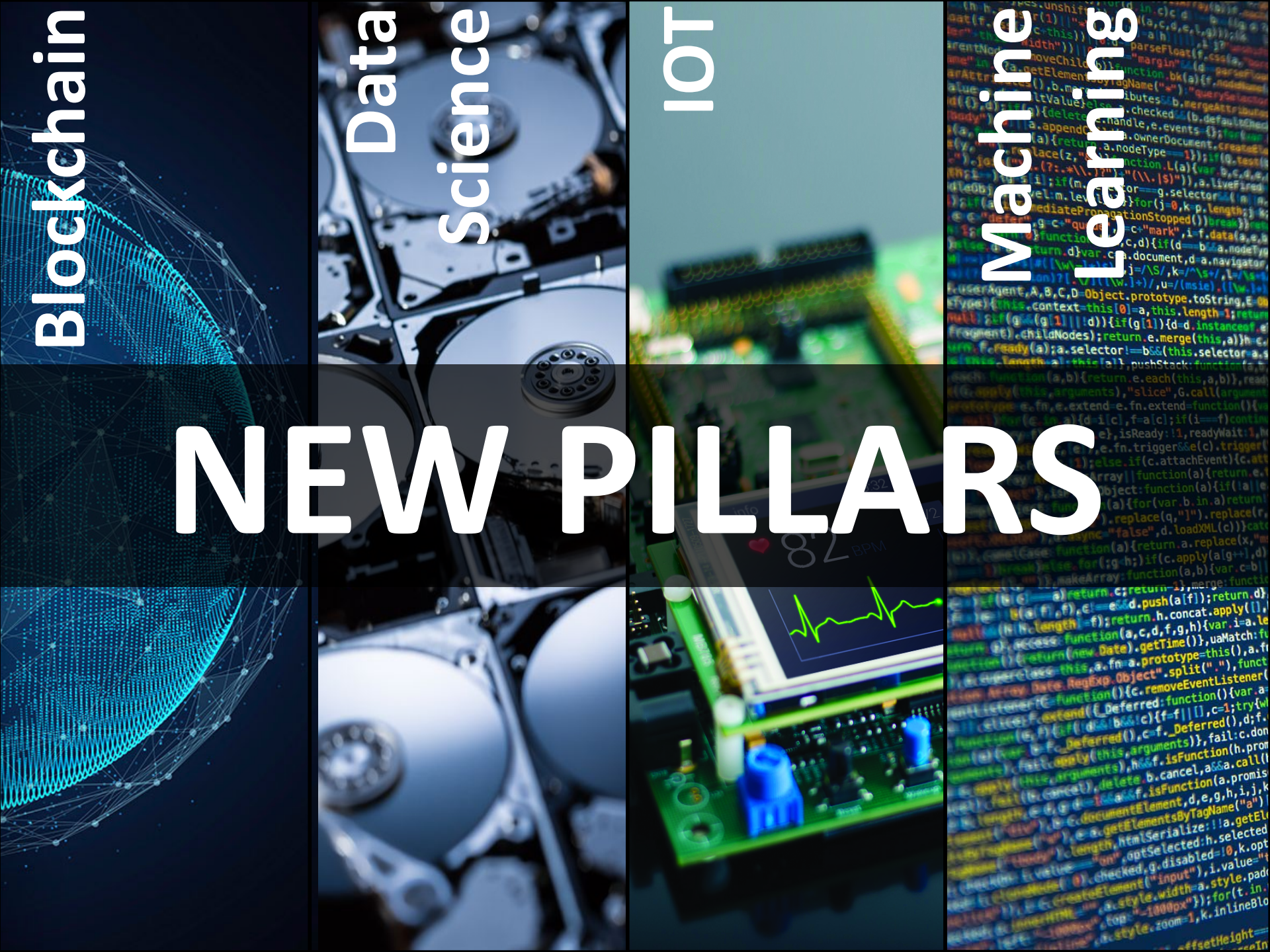
Blockchain

Data
Science

IIOT

Machine
Learning

NEW PILLARS



Voice

X Reality

Security

NEW PILLARS