



The Biggest Digital Brains

LAB EXPERIMENTS and space probes are fun. But they're also sort of ... passé. Now, postdocs can hole up in a cluttered office and do science on computers. OK, *supercomputers* (or big clusters of ordinary computers). That's what it takes to handle the teraflops—trillions of floating-point operations per second—required to reproduce, say, the inner workings of the human brain (shown here) or the outer realms of the universe. Supersimulators are popping up around the world. Here are five of the biggest and coolest. —Patrick Di Justo

BLUE BRAIN

Ecole Polytechnique
Fédérale de
Lausanne, France

WHAT IT DOES Simulates the interactions among neurons in the neocortex—the brain's reasoning center—to learn how thinking works.
PROCESSORS 8,192
PEAK TERAFLIPS 22.4

DISCOVER

NASA Goddard Space
Flight Center, Greenbelt,
Maryland

WHAT IT DOES Reproduces Earth's paleolithic-era climate and uses it to test new models for predicting weather patterns.
PROCESSORS 11,032
PEAK TERAFLIPS 111

VISUALIZATION CLUSTER

Hayden Planetarium,
New York City

WHAT IT DOES Re-creates the universe. When the visitors leave, scientists from around the world take over the Planetarium to play what-if.
PROCESSORS 300
PEAK TERAFLIPS 5.54

RANGER

Texas Advanced Comput-
ing Center, Austin, Texas

WHAT IT DOES Repli-
cates the interactions of
the H1N1 flu virus with
the human body and the
effect of various over-
the-counter drugs.
PROCESSORS 15,744
PEAK TERAFLIPS 504

EARTH SIMULATOR

Japan Agency for Marine
Earth Science and Tech-
nology, Yokohama, Japan

WHAT IT DOES Runs
global climate simula-
tions. A recent upgrade
tripled its speed, mean-
ing more accurate and
timely predictions.
PROCESSORS 1,280
PEAK TERAFLIPS 131

Most Dangerous Object in the Office This Month .44 Magnum Bang Stick

Alligators are like Steven Seagal—cold-blooded, reptilian, and hard to kill. That's why pro gator hunters carry a bang stick, essentially a bullet chamber affixed to the end of a metal rod. There's no trigger: Simply remove the safety, jam the tip down hard just behind the gator's skull, and watch out for flying bone fragments! There are many types available, from a puny .22-caliber up to 12-gauge. We opted for a Dirty Harry special. Any punk swamp lizard that tries to attack us in the washroom is gonna wind up as matching boots, laptop bag, and Wiimote holster. —KELSEY HAZLEWOOD