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The robot that can change shape to fit tight spaces

[Terminator T 1000 Morphing Robot Wanted](#)

DARPA wants to use shape-shifting robots

Remember T 1000, from the Terminator 2 movie? It was capable of perfectly emulating the shape, color, and texture of anything that it touched, capable of altering its molecular state between solid and liquid at will, and of reforming itself in seconds. The U.S. Defense Department, through The Defense Advanced Research Projects Agency, issued a request for proposals to develop a "chemical robot" made of soft, flexible materials that can squeeze through openings smaller than its static dimensions and then reconstitute itself to perform a military task. Robots are commonly used in modern warfare to disarm improvised bombs, or see around corners or upstairs, but their size and structure limit the spaces they can get into. "Often the only available points of entry are small openings in buildings, walls, under doors, etc. In these cases, a robot must be soft enough to squeeze or traverse through small openings, yet large enough to carry an operationally meaningful payload," DARPA stated in a solicitation last week. "ChemBots represent the convergence of soft materials chemistry and robotics to create a fundamentally new class of soft meso-scale robots." ChemBots is the official name of the project, and anyone who can come up with a viable proposal in this matter is warmly welcome to enter this competition. "Nature provides many examples of ChemBot functionality. Many soft creatures, including mice, octopi, and insects, readily traverse openings barely larger than their largest "hard" component, via a variety of reversible mechanisms," DARPA stated, and that has been the inspiration source for this request. Now, don't get your hopes up too much, because you won't see an army of T 1000s marching through the battlefields just yet. For the time being, DARPA is looking for more realistic applications, meaning robot prototypes about the size of a softball that can travel a distance of 5 meters at a quarter of a meter per minute, collapse to a tenth of its size and then squeeze through a 1 centimeter opening and reconstitute to its original shape in 15 seconds. For those of you thinking "Dang, I'll have to find a way to slow this thing down a bit...", remember that there has to be a start for everything, and that the Wright brothers' plane flew only 853 feet (260 meters) on its first attempt.