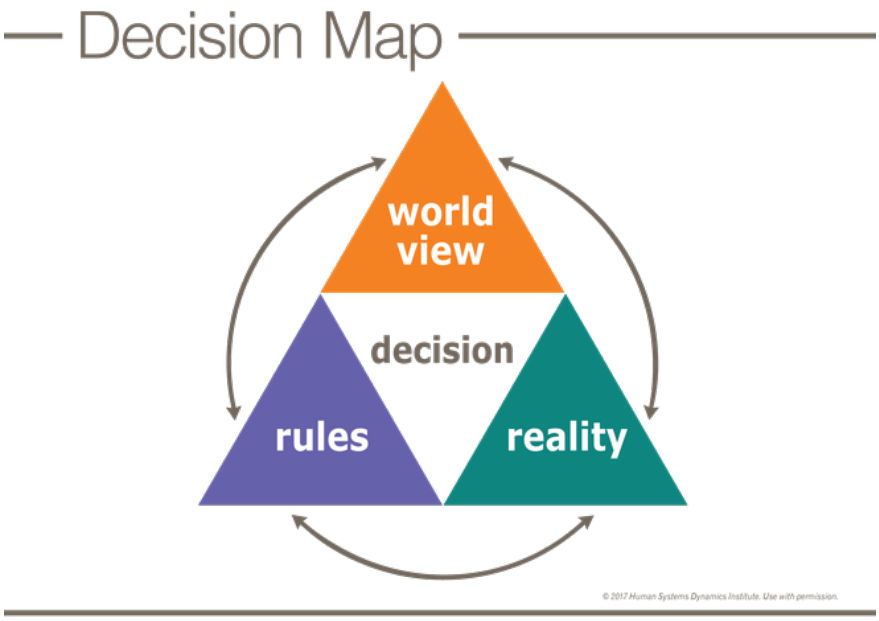
The MIT team claims to find the most effective way of 'intercepting' meteorites

We are lucky to be smarter than dinosaurs.

Surely we all hope the Earth will never collide with an asteroid again, like the catastrophe happened to dinosaurs 65 million years ago.

But in the vast universe with countless asteroids moving around, everything is uncertain.So recently MIT scientists have come up with a 'decision map' to find the best solution in case the meteorite is at risk of approaching the Earth.

The 'decision map' takes into account factors such as the asteroid's mass and momentum, and then calculates the best way to avoid collisions if the object pierces its 'gravitational keyhole'. Earth - the space at which if asteroid flies in, it will definitely crash down to Earth.



The decision map will make the best choice based on objective and subjective factors.

At the end of the decision map are three options:

- Change the asteroid's direction with a flying object.

- Send a reconnaissance satellite to reach additional data collection.

- Or send two reconnaissance satellites to make more measurements and may slightly change the asteroid's path.

Only by accurately probing every parameter of the asteroid can scientists calculate the energy needed to make it deviate from Earth's orbit.

Aerospace engineer Sung Wook Paek said: *"People are mainly calculating the asteroid's deflection at the last minute, when it has passed through the keyhole and is about to collide with the Earth. But I'm more interested in stopping it before it reaches the keyhole, which is like a preemptive attack, so there will be less clutter. "*

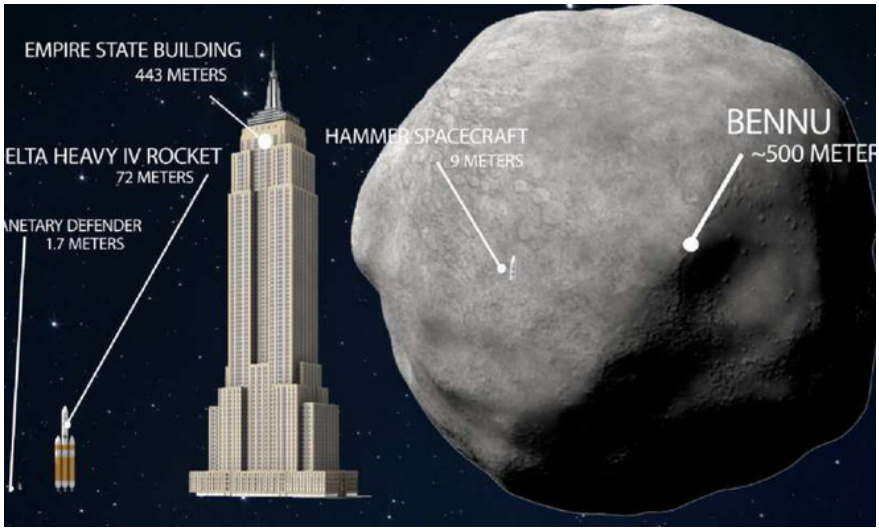
The idea behind the simulation that Paek and his colleagues came up with was to reduce the risk of operational options.To find a way to deflect an asteroid, we need to track and collect a large amount of information about it. Importantly, the decision-making process of scientists must take into account the amount of time before an asteroid is able to touch the keyhole, while also considering the surprises not included in the scenario.

"What if the mission's probability of success is 99.9% or only 90%?", Says aerospace engineer Olivier de Weck. *"When it comes to deflecting an asteroid that threatens to destroy an entire planet, a few percent certainly is also important."*

"Therefore, to be sure of the victory, we have to be smarter in designing the missions, to minimize the unfortunate situations that may occur. No one has really considered this before."

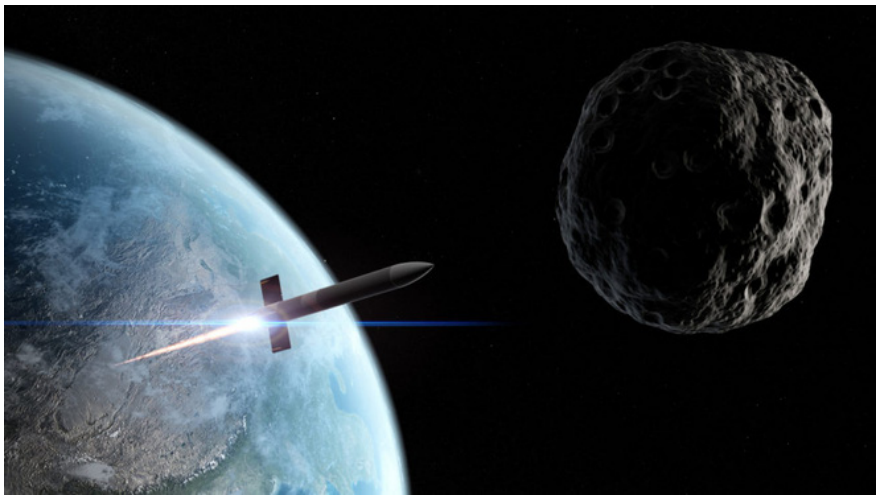
Although the probability of a collision between the Earth and the asteroid is still low, it is not outside the possibilities existing in the future and even with modern scientific tools, an asteroid can still ' sneak in as soon as we don't take precautions.Therefore, it is very important to have a backup plan.

Simulations have been tested on the asteroids Apophis and Bennu, which are the two asteroids near Earth that we have the most data on - and also the two of the asteroids with the highest chance of becoming into the second 'terminator'.Apophis has a chance of colliding at a rate of 1 / 150,000 by 2068, while Bennu's collision rate is 1 / 2,700 between 2175 and 2199.



Compare sizes of asteroid Bennu.

That gives us plenty of time to prepare and continue to recalculate the rate of meteorite impact.For example, if Apophis were 5 years from Earth before passing through the expected keyhole, the two spying satellites that followed it would be the "main agents" to keep it moving within a safe range.However, if the response time is only about a year when it is about to pass through the keyhole, the containment will probably not be timely.The results for the asteroid Bennu are similar, although we know a little more about its composition, and when things go bad, firing a rocket will be the best way to act.



In short, analyzing decision maps from now on will help humanity make decisions faster before actually doing something.

"Instead of resizing a rocket, we can shoot more and send smaller spacecraft to collide with an asteroid."

"Or launching rockets from the moon or using inactive satellites as dynamics agents is also a good option."

'Right now we have created a decision map that can help create the prototype of a future mission, " Paek said.

The study has been published in Acta Astronautica.