

DART - This one's for the dinosaurs!



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Credit: NASA/Johns Hopkins APL



66 million years ago was a bad year for the dinosaurs

- 6 mile wide asteroid hit present-day Mexico
- Moving at 12 miles/s (45,000 mph)



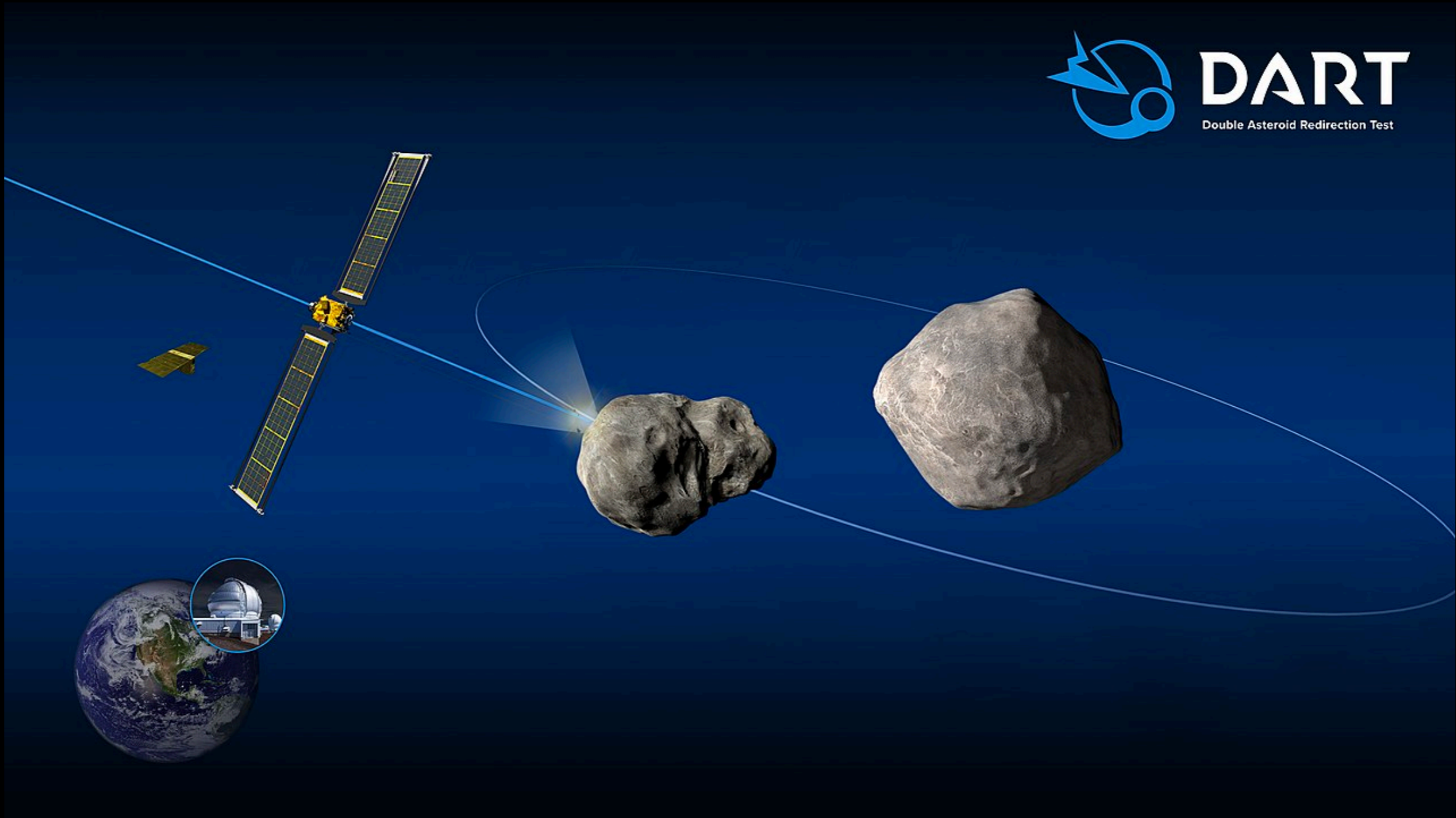
66 million years ago was a bad year for the dinosaurs

- Left a sizeable crater (110 miles across)
- And a mass-extinction of 75% of all plants and animals



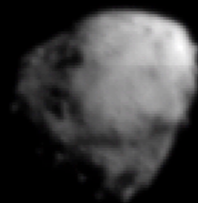
Revenge!

Last week we struck back (a different asteroid...)



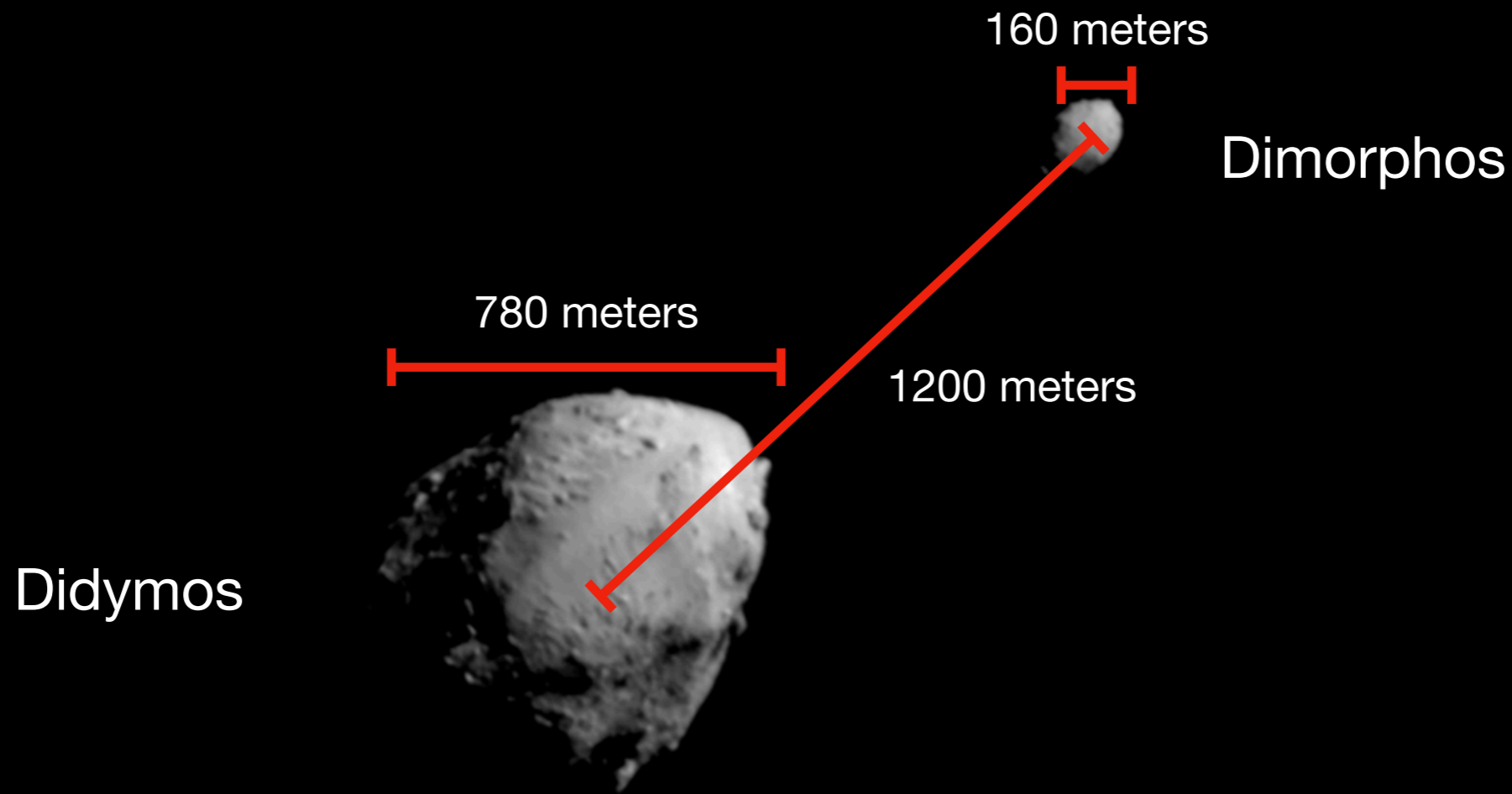
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Revenge!

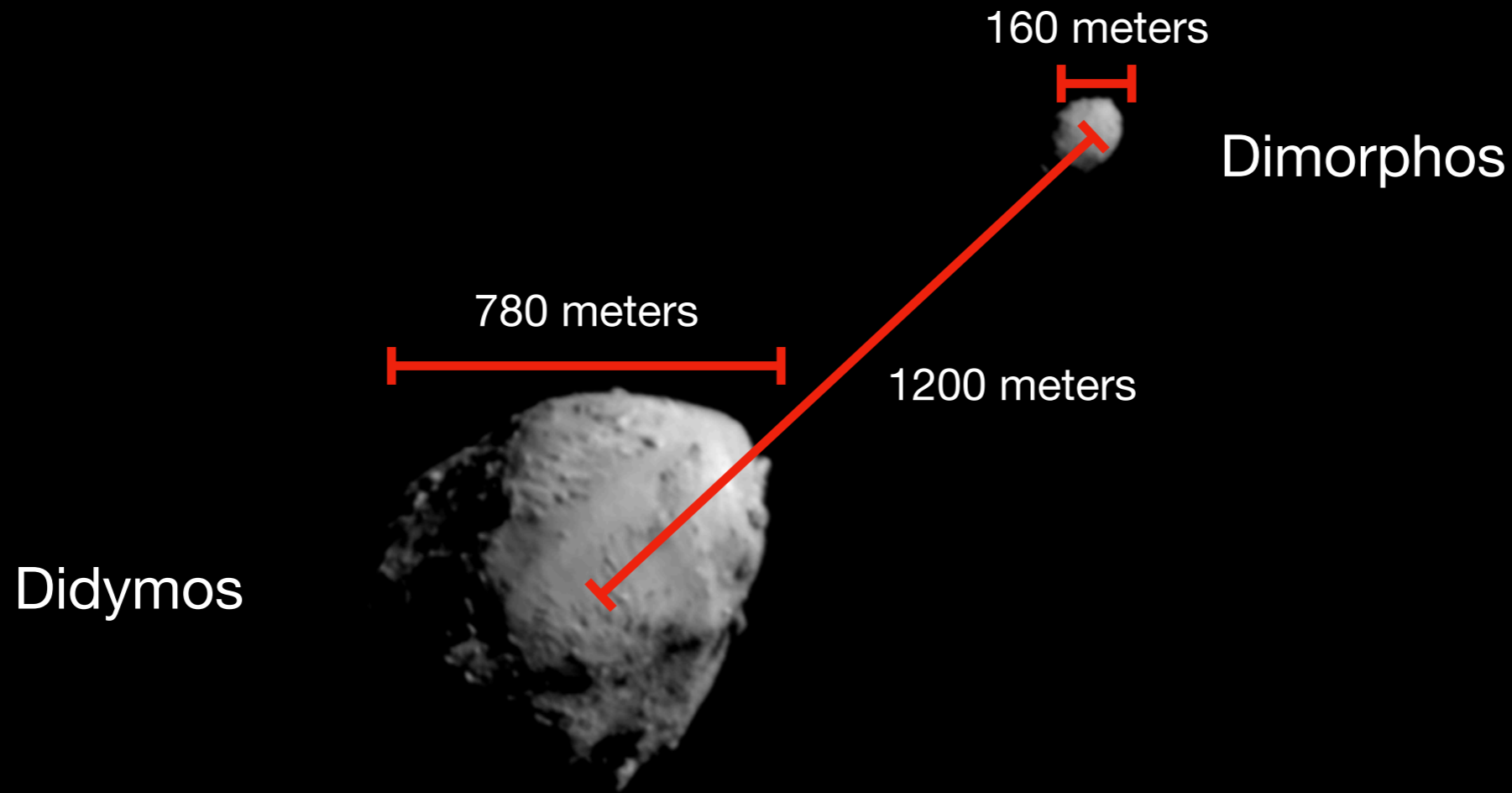
Last week we struck back (a different asteroid...)



- Just 17 meters off target after 7 million mile journey!
- Like hitting a bullseye in New York from London

Revenge!

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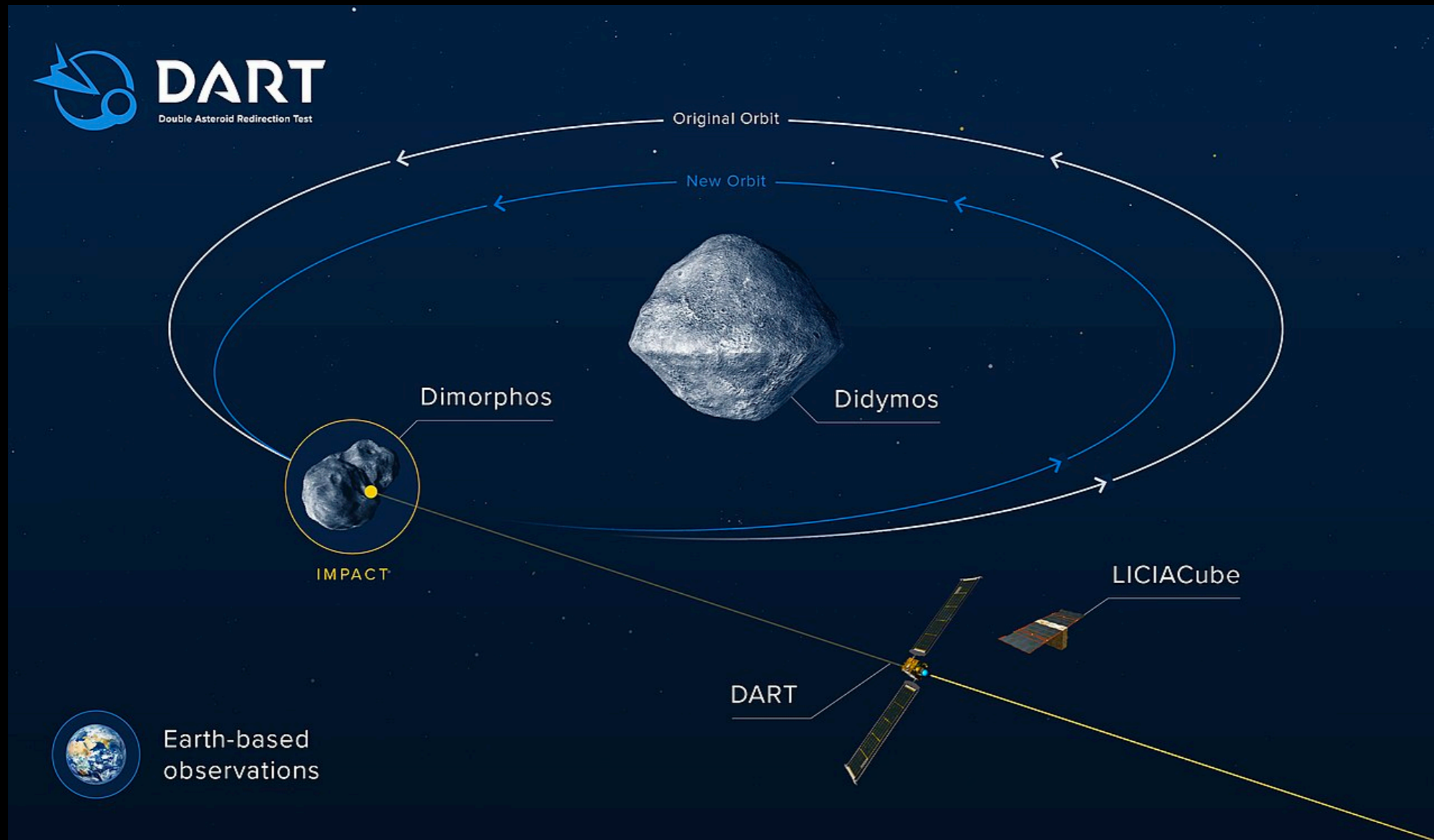


- Binary asteroid makes it easy to detect changes
- Keeps most debris contained near Didymos

Revenge!

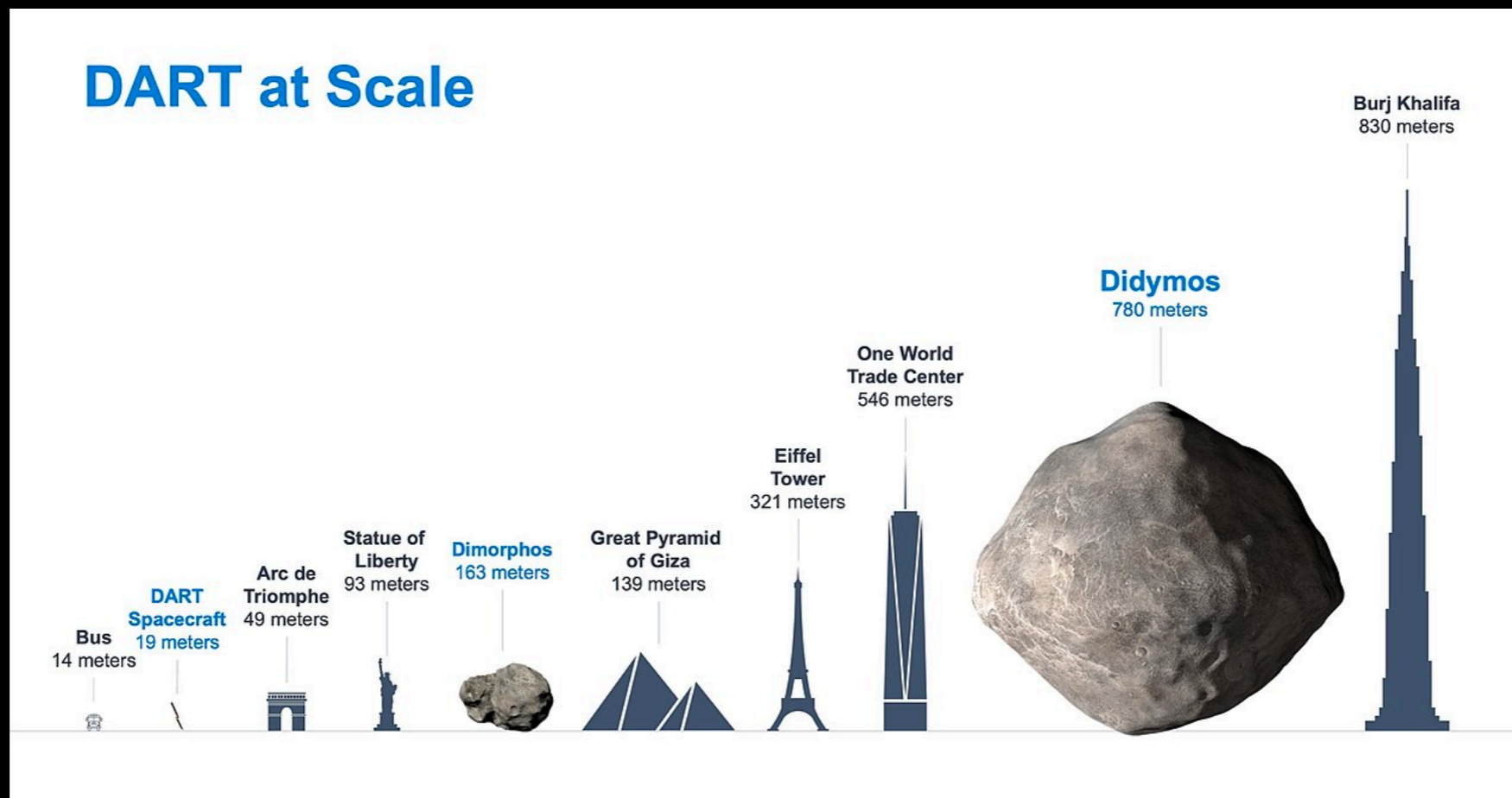
Last week we struck back (a different asteroid...)

- Impact should change orbit of Dimorphos around Didymos



For a sense of scale

- DART mass - 610 kg
- Dimorphos mass - 5 billion kg
- Like throwing a grain of sand at an orange!
- Predicted speed would change by 0.4 mm/s (a snail's slither)



Credit: NASA/Johns Hopkins APL

What happened?

A lot of material flew off!

View from Earth



Credit: ATLAS project

View from LICIACube

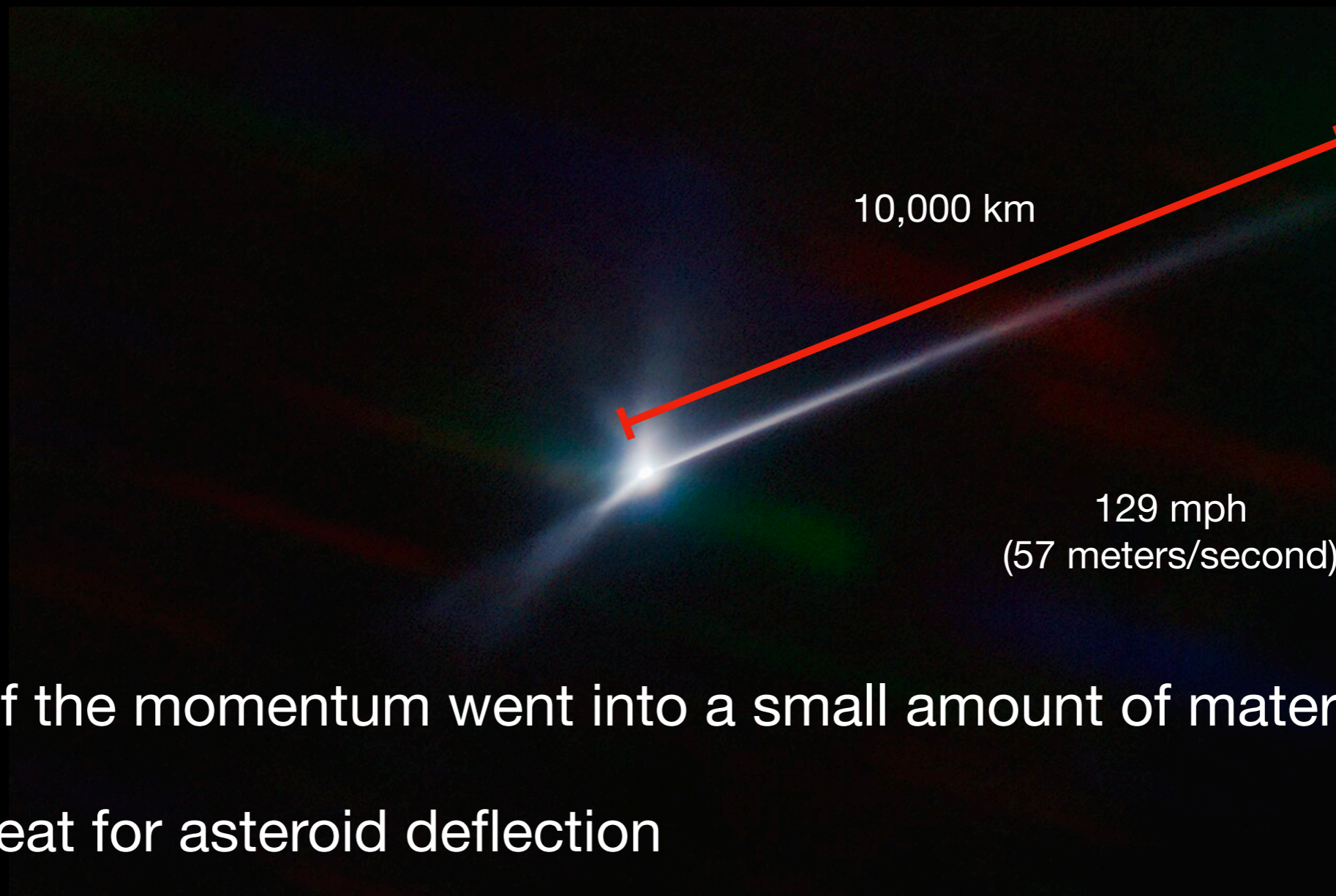


Credit: ASI/NASA

What happened?

A lot of material flew off!

View from Earth 2 days later



What happened?

Similar streamers are seen in experiments

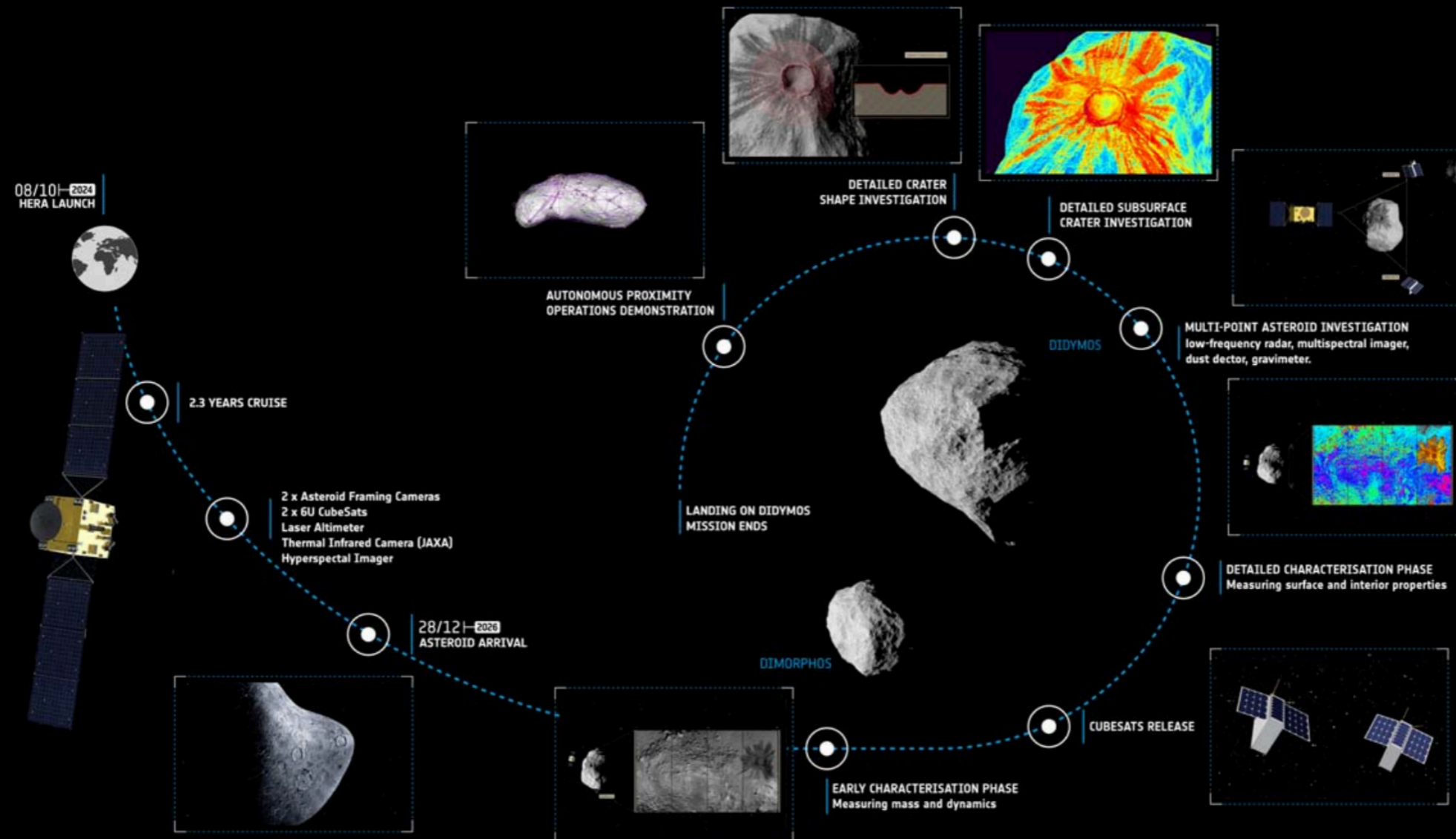
4.75 mm Aluminum projectile

Impacting at 2.6 km s^{-1}

Sand mixed with rubble

What happened?

Follow-on mission to launch in 2024





- We don't want to suffer the same fate as the dinosaurs
- DART successfully hit the asteroid Dimorphos
- First planetary defence test!
- A follow-on mission will be launched in 2024
- There's still a lot to learn

Thank you!