

# From Chandrayaan 3 to an Indian on the Moon

A few insights into India's triumphant Moon landing and unique approach



– Jatan Mehta  
Space for Inspiration 2024, ESA ESTEC





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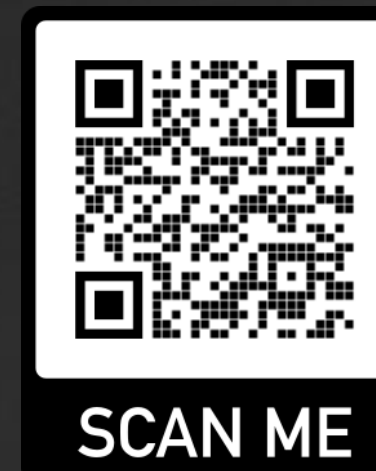
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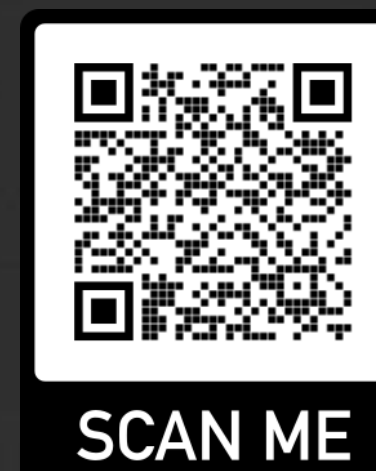
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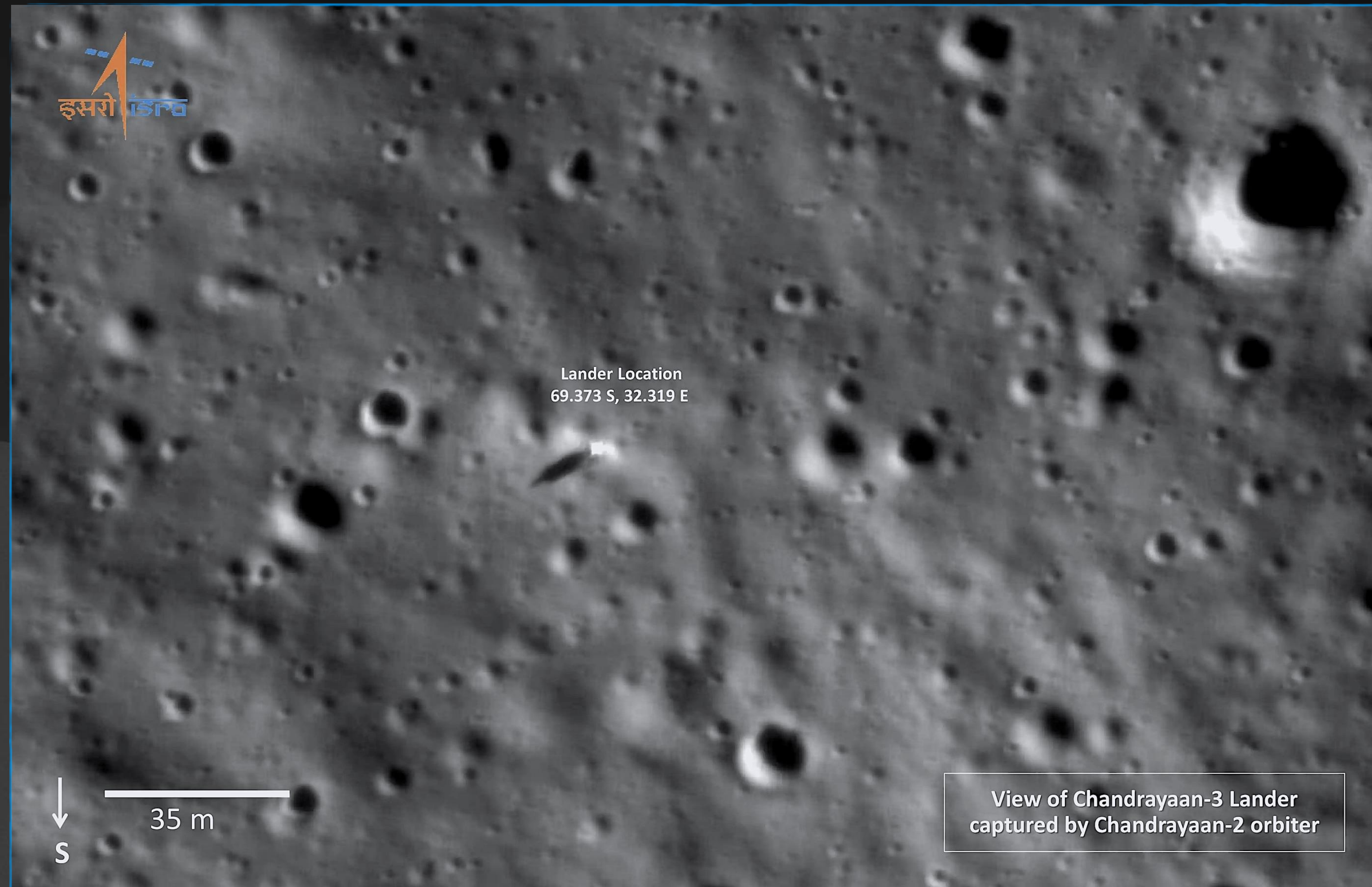
# The moments of launch and landing





# Success draft and failure draft

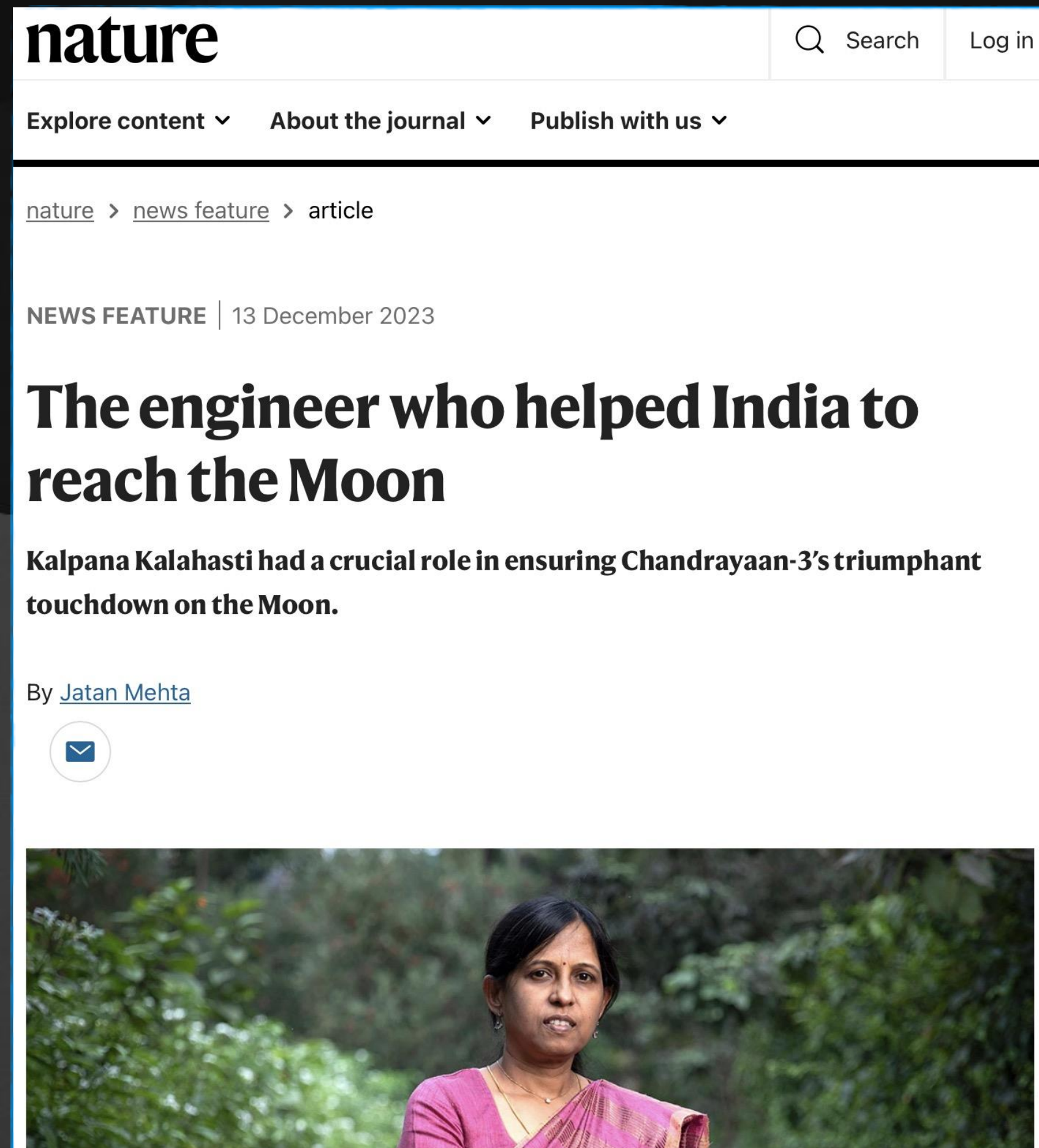
Chandrayaan 3 landed 350 meters from the center of the target landing ellipse of 4 by 2.5 kilometers





# The most important difference between Chandrayaan 2 and 3 was *testing*

As orchestrated by Palanivel Veeramuthuvel and Kalpana Kalahasti



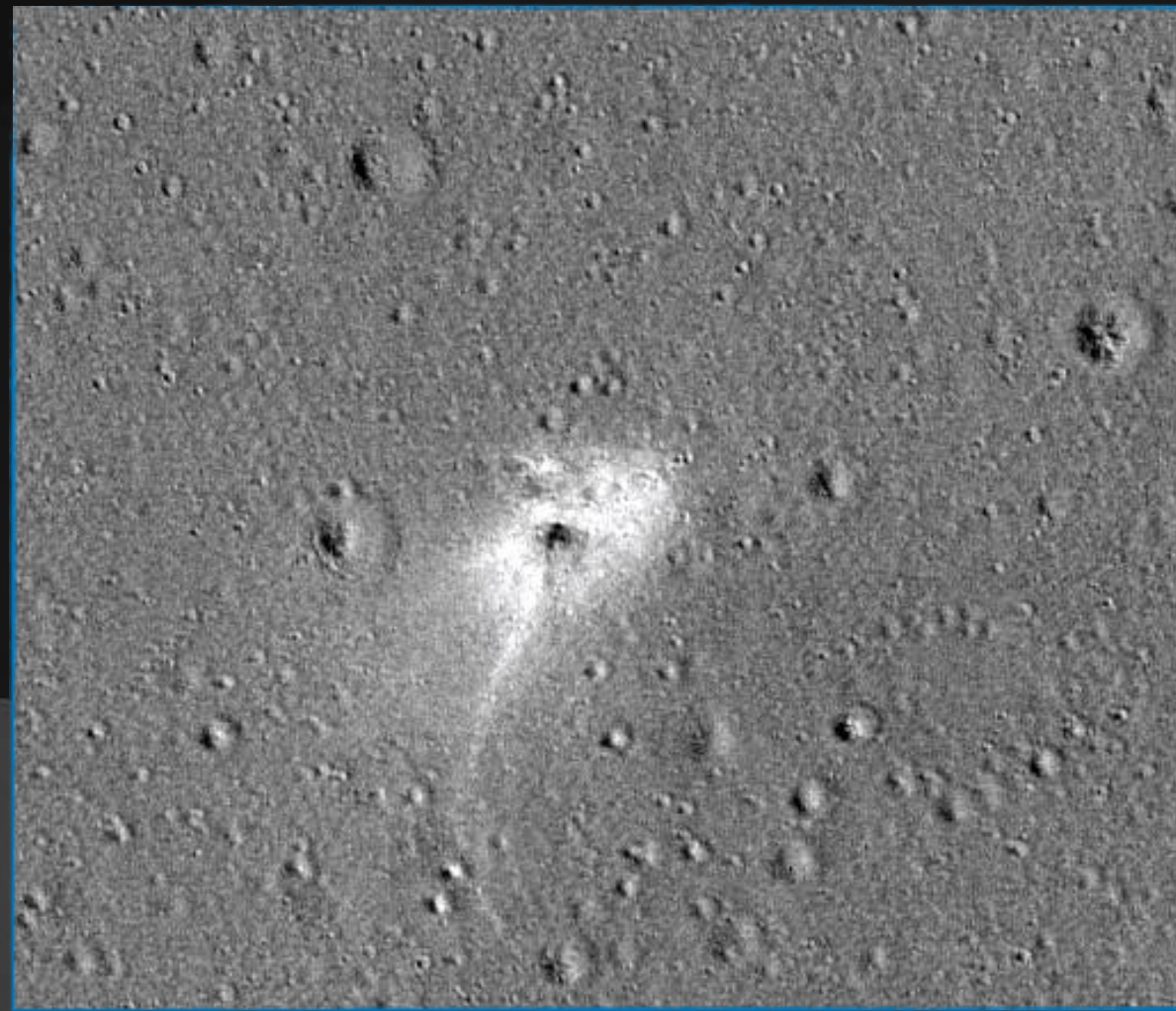
*Veeramuthuvel and Kalahasti spent the bulk of Chandrayaan-3's development time devising and overseeing comprehensive tests and simulations, such as assessing the navigation system's ability to avoid hazards before touchdown on Moon-like terrain.*

*"The goal was to have a well-documented, well-understood system. There was no compromise in demonstrating the system's performance," says Kalahasti.*

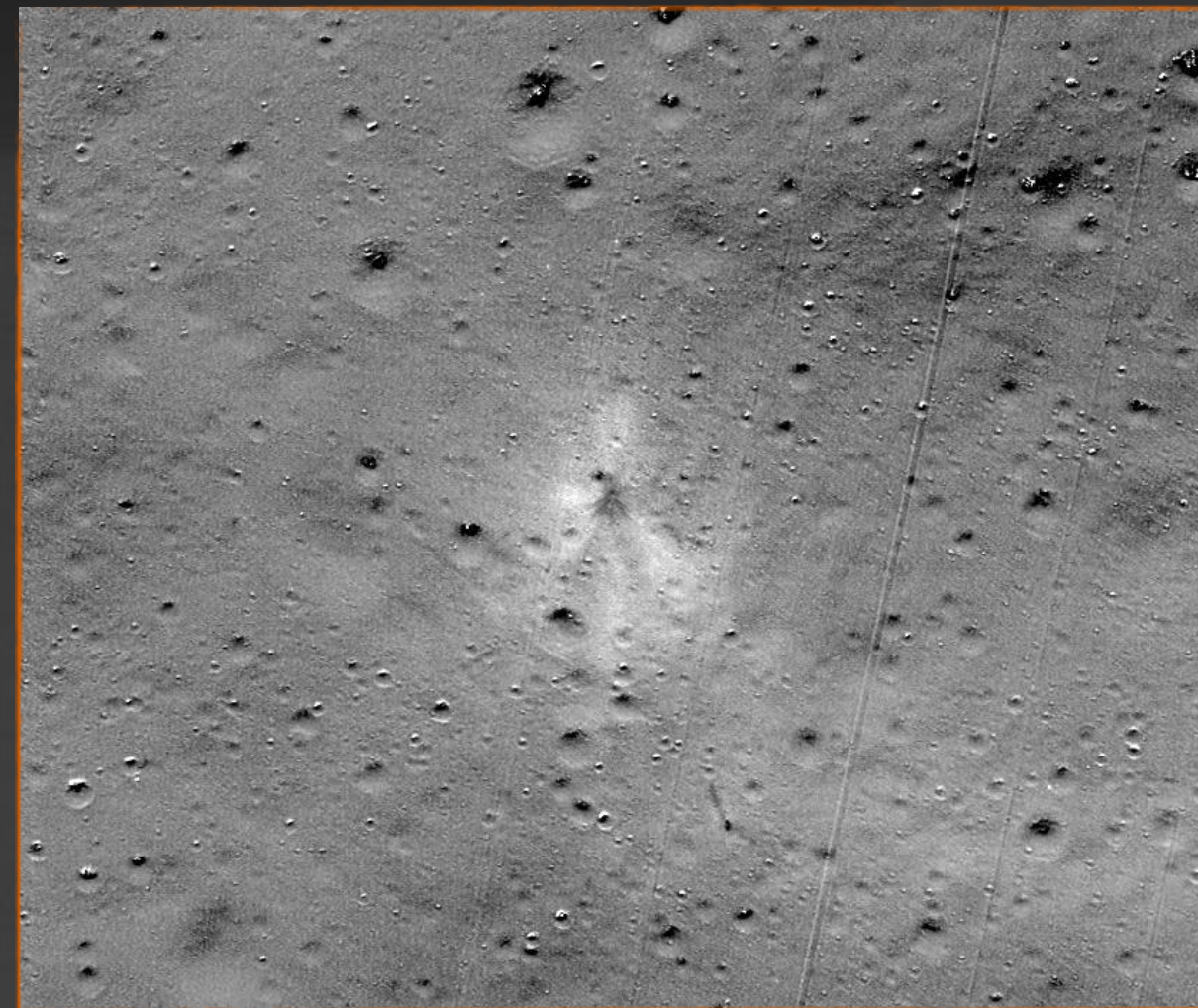


# Reminder that Moon missions remain risky

While our lunar ambitions may have risen, orchestrating hundreds to thousands of people and spacecraft parts for any Moon mission remains a complex, resource-intensive endeavor



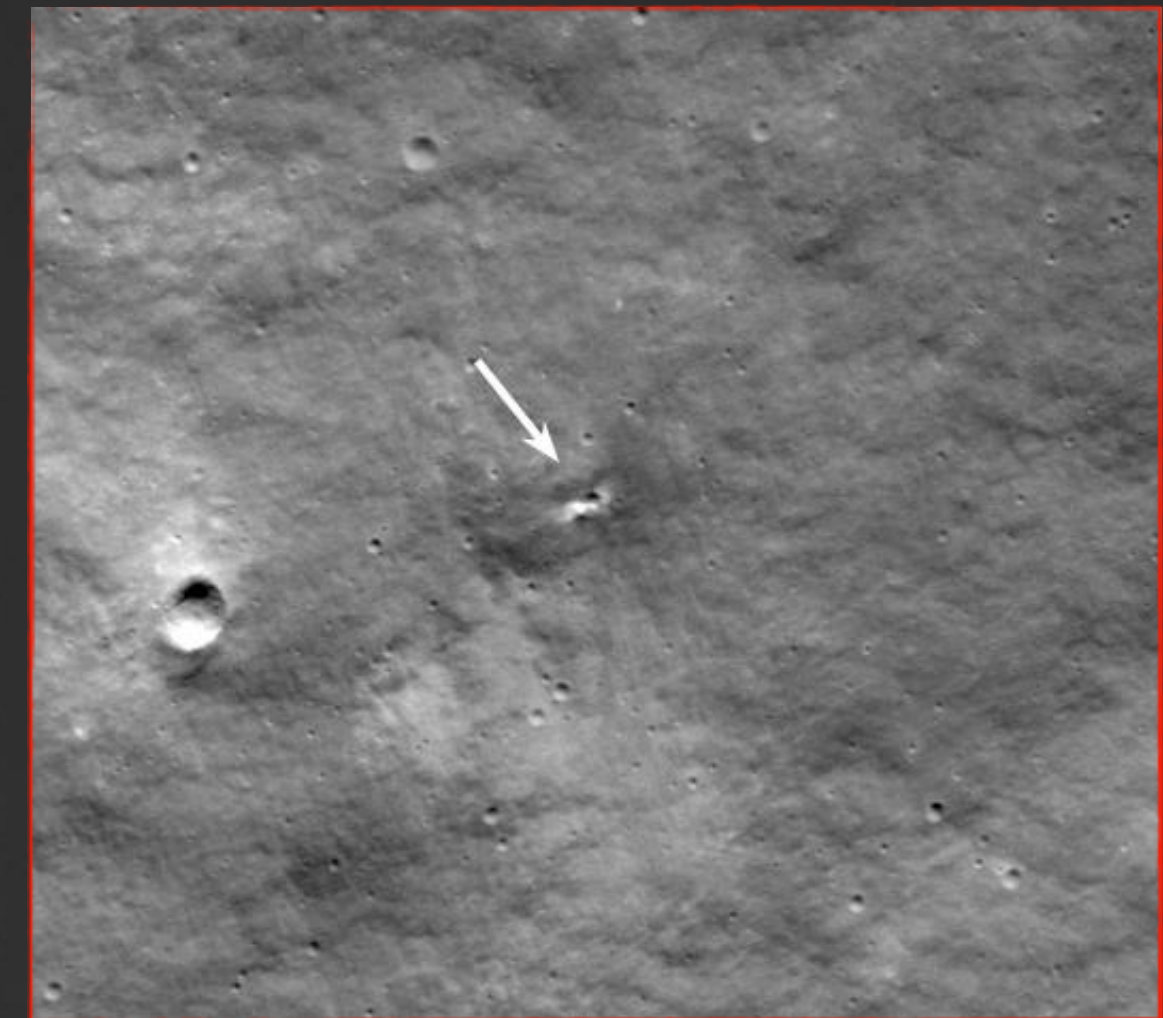
*Beresheet crash*



*Chandrayaan 2 lander crash*



*Hakuto-R crash*

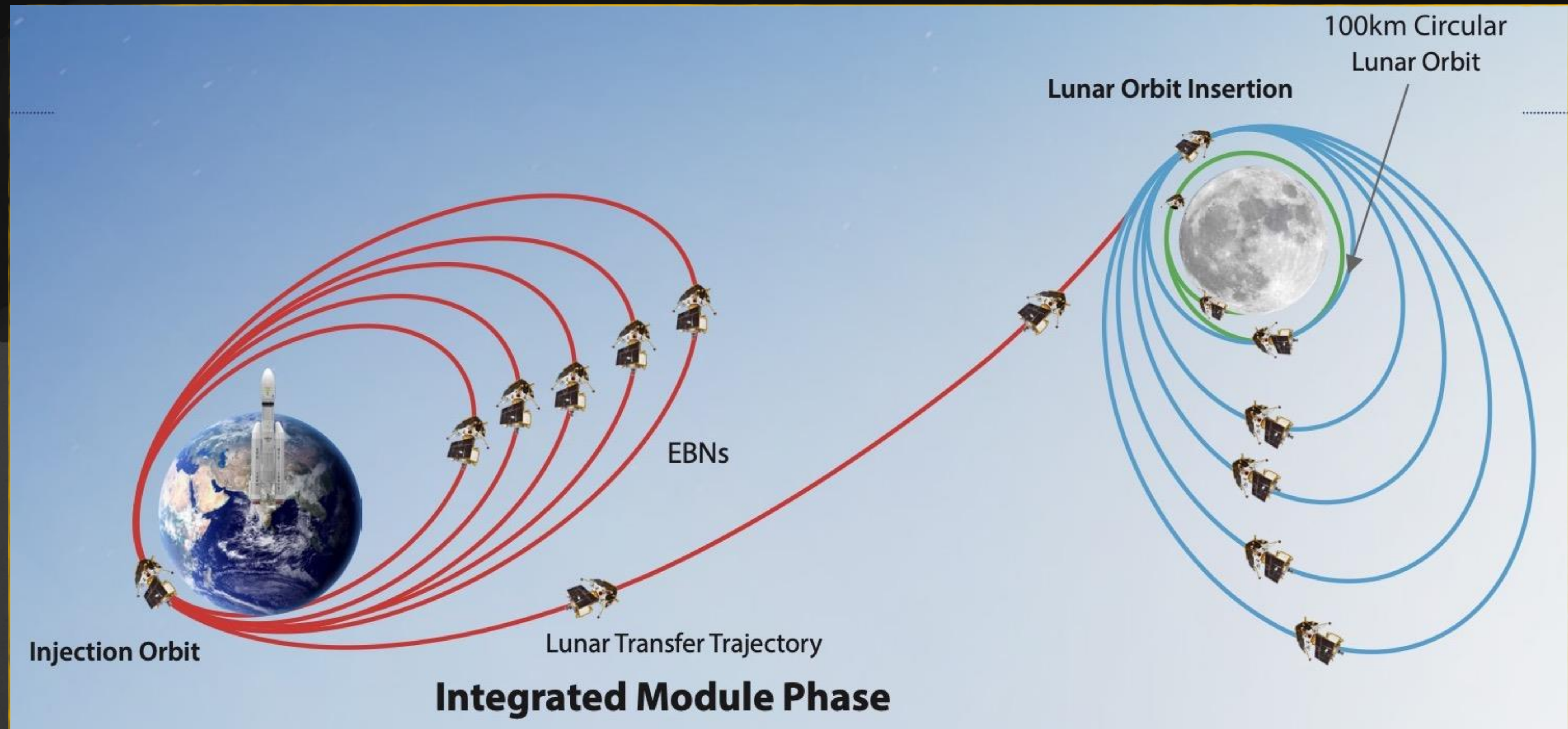


*Luna 25 crash*



# Cost of Chandrayaan 3 and ISRO's planetary missions

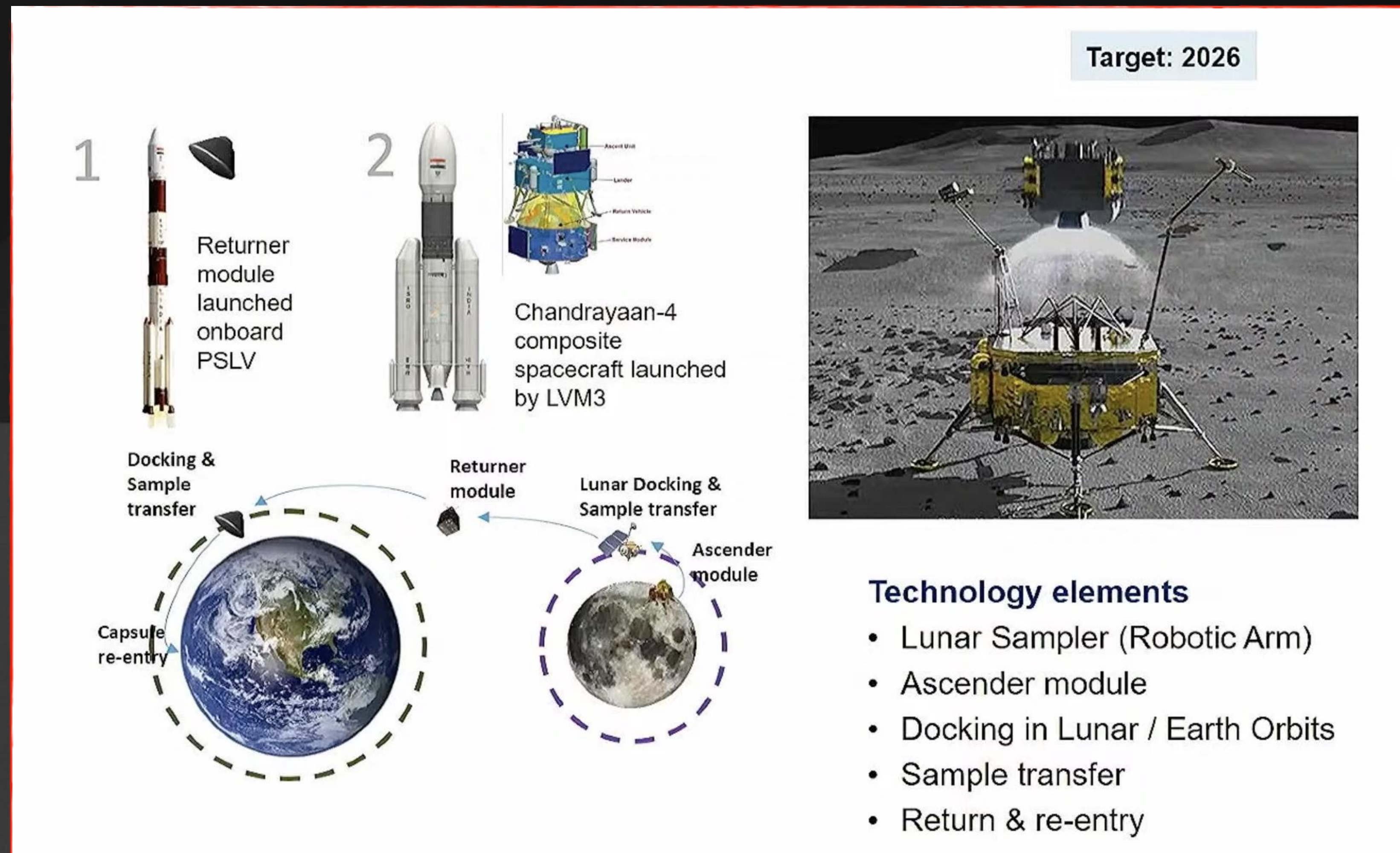
Work with the resources available





# This approach continues to be visible in planning of future missions

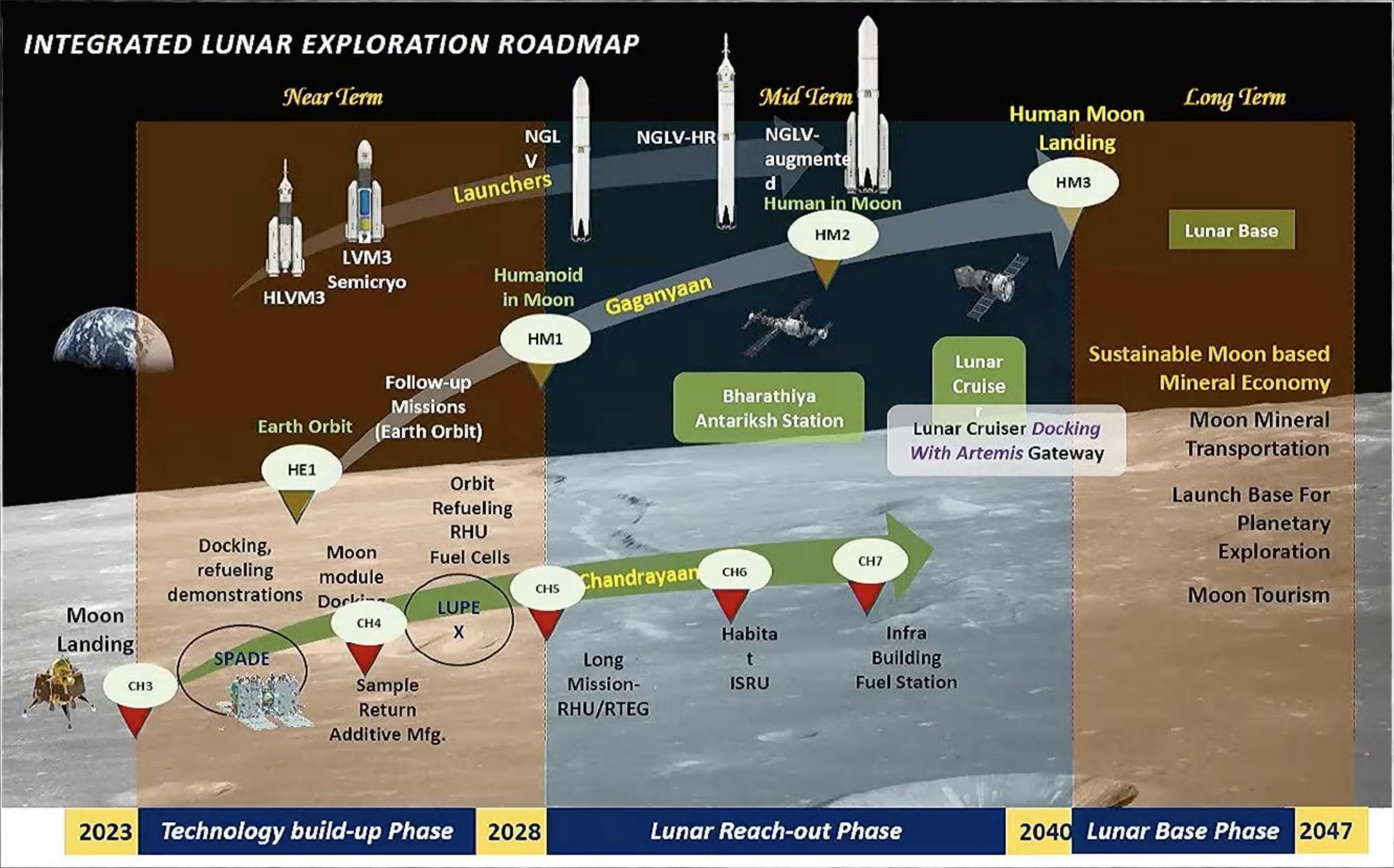
Chandrayaan 4, a precursor to sending humans to Luna, and a direct look at the Moon's past





# A notional roadmap tying to the announcement of sending an Indian to Luna

Note the Gateway lunar cruiser





# International collaboration

LUPEX, a joint JAXA-ISRO Moon mission to study water ice on the Moon's south pole





# Too much is happening even for people in lunar exploration to catch up!

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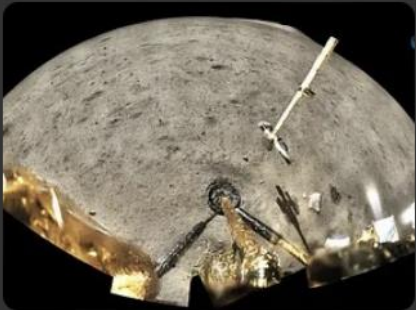
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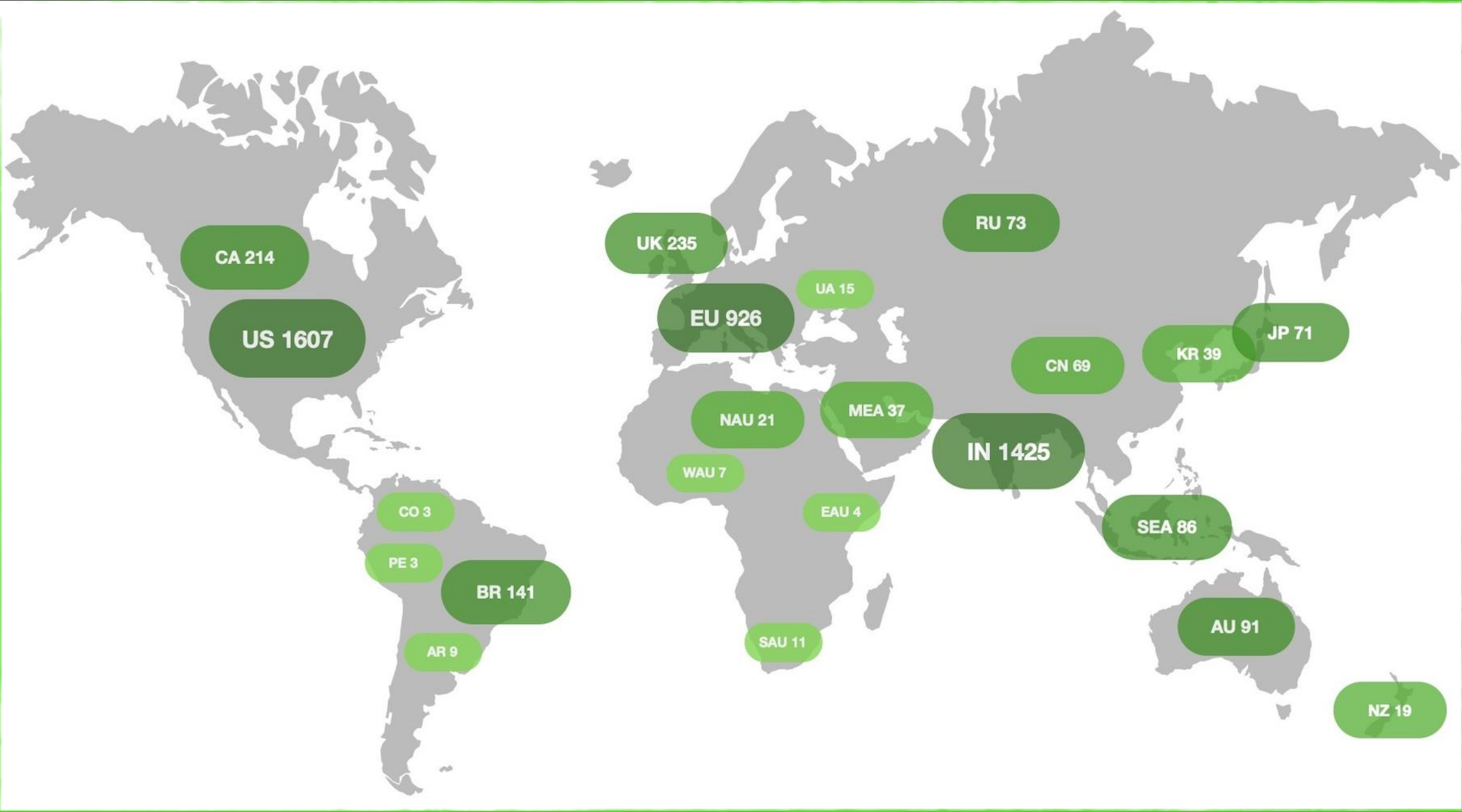
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*“Apart from the [Chandrayaan 3] mission’s technical aspects, I hope young professionals across India and the world get inspired by how the team meticulously emerged from failure.”*

*– Kalpana Kalahasti  
Associate Project Director, Chandrayaan 3*



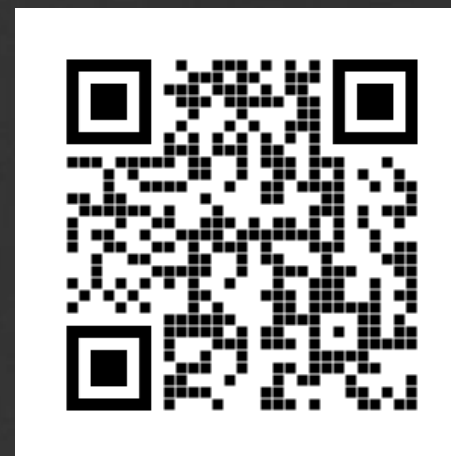
# Thank you for your time

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