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JAXA and Toyota Commence Joint Research Into Manned, Pressurised Lunar Rover

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The Japan Aerospace Exploration Agency (JAXA) and Toyota Motor Corporation (Toyota) today announced they have signed a three-year joint research agreement, running from the fiscal years 2019 to 2021. On 12 March 2019, the two parties announced their agreement to consider collaboration on joint research into a manned, pressurised lunar rover that uses fuel cell electric vehicle technologies.

Over the course of the three-year joint research period, JAXA and Toyota will manufacture, test and evaluate prototypes, with the goal of developing a manned, pressurised lunar rover and exploring the surface of the moon as part of an international project.

Details of the joint research

Overview of the research to be carried out in each year from 20 June 2019 to the end of fiscal year 2021: -

- Fiscal year 2019: identifying technological elements that need to be developed for driving on the surface of the moon; drawing up specifications for a prototype rover*.
- Fiscal year 2020: manufacturing test parts for each technological element; manufacturing a prototype rover.
- Fiscal year 2021: testing and evaluating both the manufactured test parts and the prototype rover.

*The prototype rover will be a modified version of a standard production vehicle.

Reference 1

JAXA intends to acquire data related to driving technologies in order to develop a manned, pressurised lunar rover. The rover will be used for missions to explore the moon's polar regions, with the aim both of investigating the possibility of using the moon's resources – such as frozen water – and acquiring technologies that enable exploration of the surfaces of large planets.

Reference 2

On 1 July 2019, Toyota established a dedicated Lunar Exploration Mobility Works. Toyota plans to extend the department's workforce to approximately 30 members by the end of the year.

Reference 3

Tentative plan, aiming to launch the lunar rover in 2029.

- From 2022: manufacture and evaluation of a 1:1 scale prototype rover; acquisition and verification testing of data on driving systems required to explore the moon’s polar regions.
- From 2024: design, manufacture and evaluation of an engineering model of the rover; design of the actual flight model.
- From 2027: manufacture and performance and quality testing of the flight model.

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