

JUICE (Jupiter Icy Moons Explorer)



The Jupiter Icy Moons Explorer (Juice, formerly JUICE) is an interplanetary spacecraft that was launched on 14 April 2023 from Guiana Space Centre in the French Guiana by the European Space Agency (ESA) with Airbus Defence and Space as the main contractor. The mission is planned to study Ganymede, Callisto, and Europa, three of Jupiter's Galilean moons. They are thought to have significant bodies of liquid water beneath their icy surfaces which would make them potentially habitable environments.

The spacecraft was launched on 14 April 2023 at 12:14:36 UTC and is expected to reach Jupiter in July 2031 after four gravity assists and eight years of travel. In December 2034, the spacecraft will enter orbit around Ganymede for its close-up science mission. Its period of operations will overlap with NASA's Europa Clipper mission, launching in 2024.

JUICE will be the first mission to orbit a moon other than Earth's.

JUICE's submillimeter wave sounder will allow scientists to measure wind speeds and temperatures in the gas giant's atmosphere and provide new information about its weather and climate patterns. JUICE's spectrometers will be able to detect chemical compounds in some parts of the planet's atmosphere with better accuracy than what was previously possible.

JUICE will carry 10 scientific instruments that, together with a similar package on Europa Clipper, will help scientists analyze Jupiter's moons and their potential to host life.

Among JUICE's instruments are cameras, sensors for analyzing the chemical composition of the moons' ice crusts and their surrounding environments, magnetometers, and radar that will create detailed maps of the moons' surfaces and, for the first time, peer beneath them.

Scientists hope that these measurements will confirm the presence of oceans beneath the moons' icy crusts. The notion that these moons harbor massive water bodies that could potentially host life came from the Galileo mission, which measured odd disturbances in the magnetic field around Jupiter. By collecting data about Jupiter and three of its moons, JUICE will enable scientists to analyze the entire Jupiter system, which can serve as a miniature model of a star system.

Solar panels:

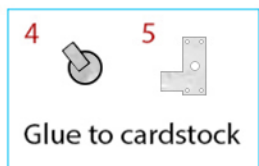
Juice has a distinctively shaped solar array – two 'wings' of panels in a cross-like formation. Overall, these wings are made up of ten 2.5 x 3.5 m panels (five on each side) with a total area of 85 m² (and a total of 23 560 solar cells) – the largest ever built for an interplanetary spacecraft, measuring 27 m from tip to tip. Their shape allows them to be large in size but also to fold up neatly inside the launcher (an Ariane 5 rocket) so they can leave Earth's surface and successfully deploy in space.

Power:

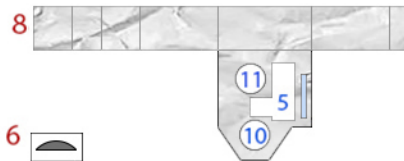
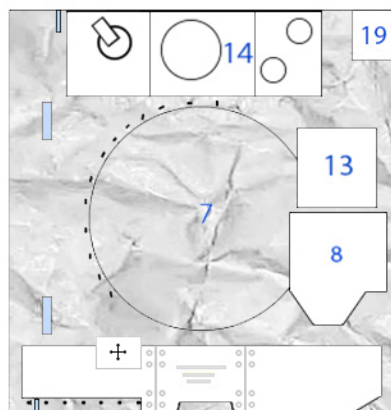
The large area of Juice's solar 'wings' produces sufficient power for the spacecraft's onboard systems and instruments – approximately 850 W – despite operating so far from the Sun. At Earth, such a surface area could power an entire road of houses, but at Jupiter, it can power a single microwave just once.



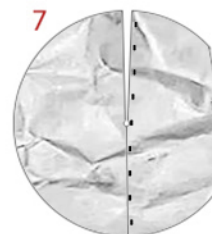
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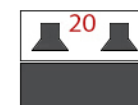
1



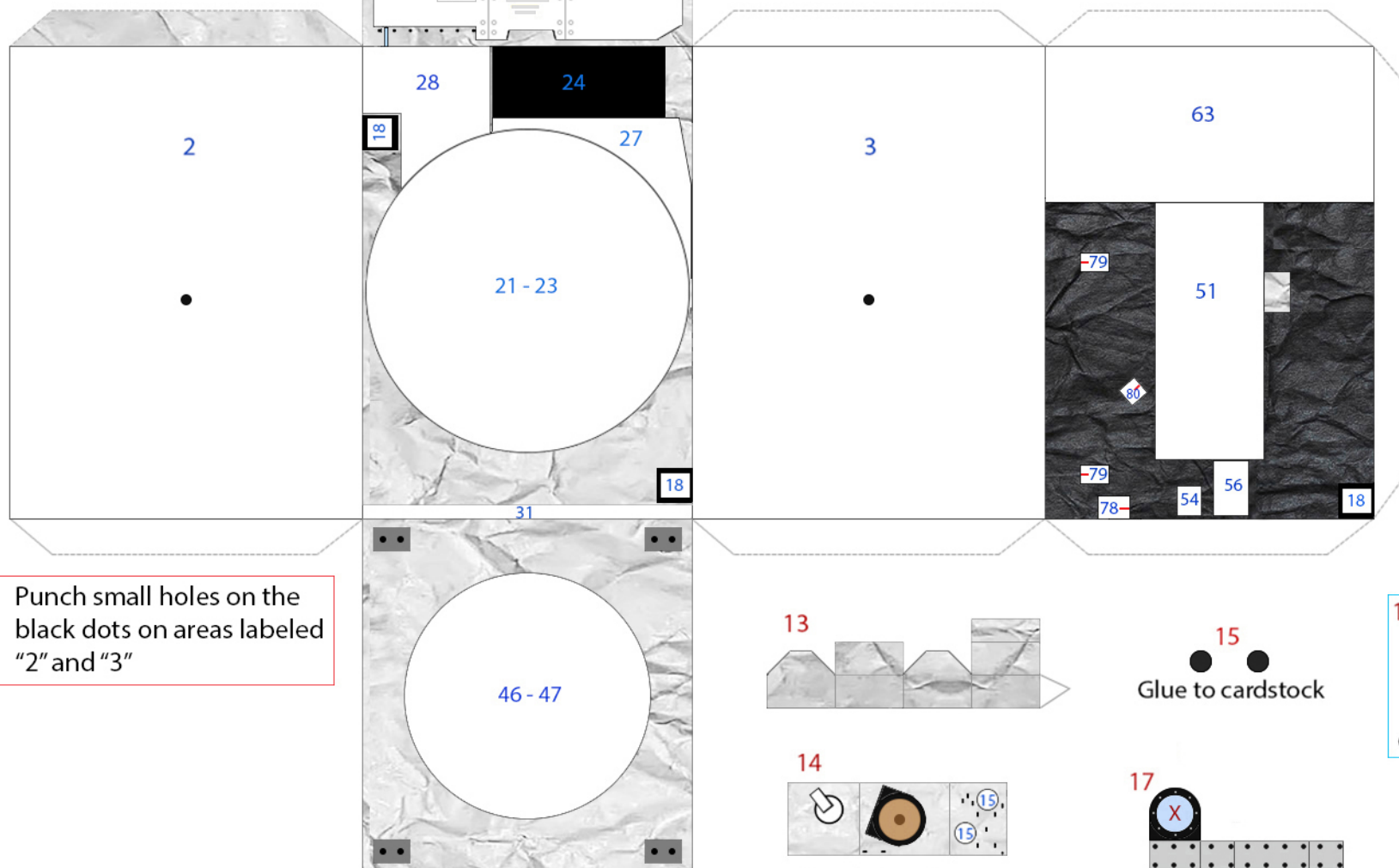
Fold, glue
back-to-back



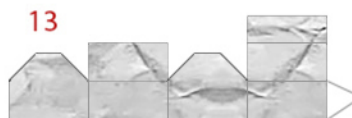
7a



Fold, glue
back-to-back



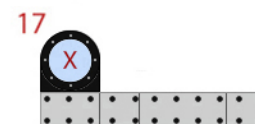
Punch small holes on the
black dots on areas labeled
"2" and "3"



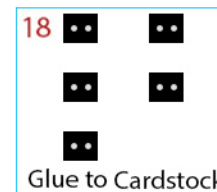
15
Glue to cardstock



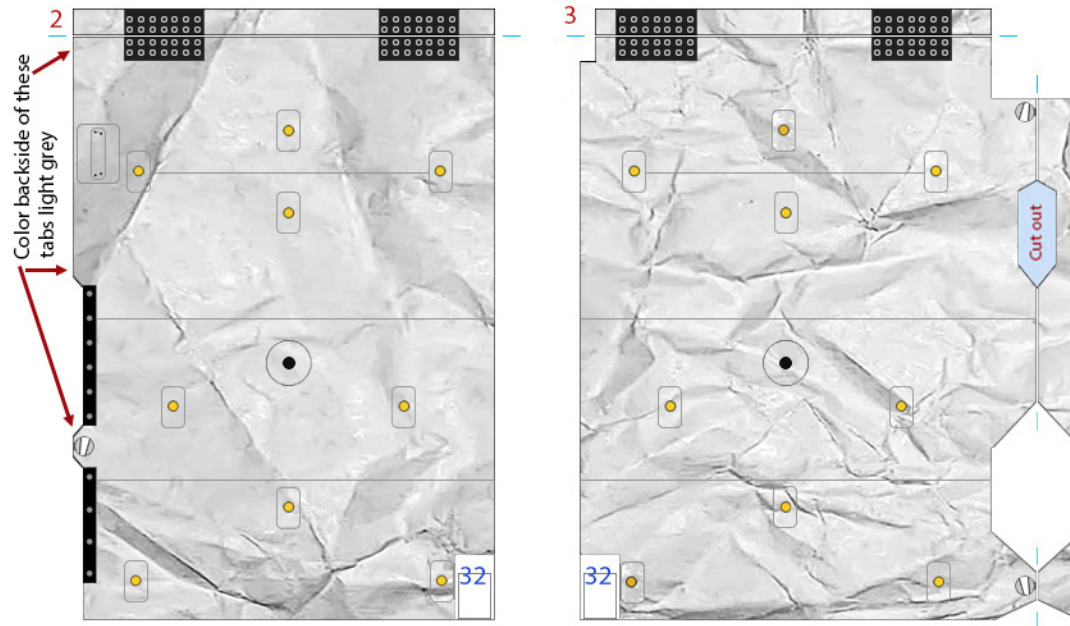
Glue to two layers of
cardstock



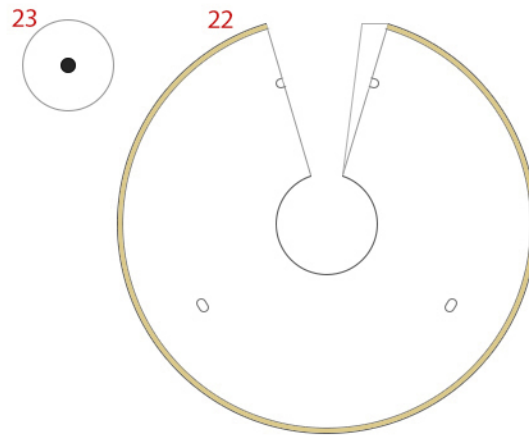
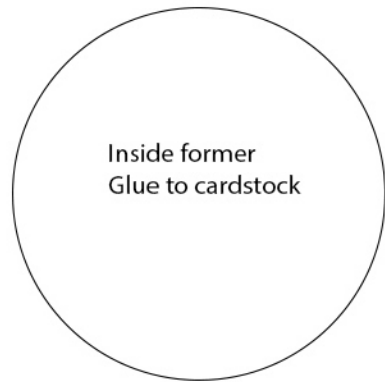
Cut out the blue area



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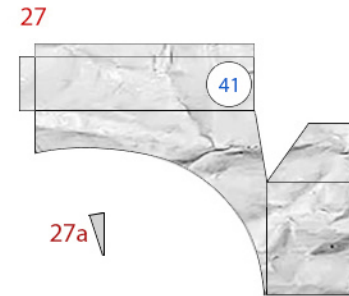
Punch small holes on the black dots above



Fold, glue back-to-back at the blue lines

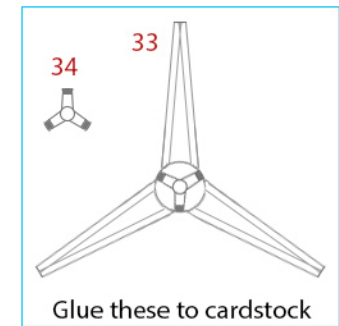


25 26
Glue to cardstock

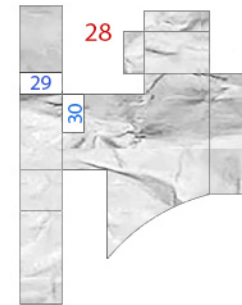


32
Glue to cardstock

31
Fold, glue back-to-back at the blue lines



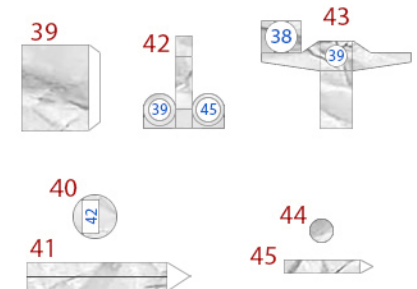
35
Color back Black



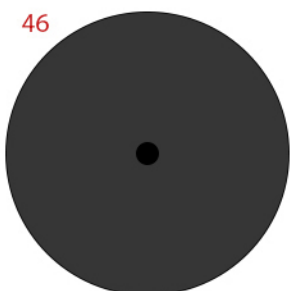
29
Fold, glue back-to-back at the blue lines

36
Glue to cardstock

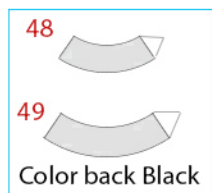
37
38
Color back light grey



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Glue to cardstock



Color back Black



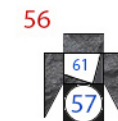
Color back Black



*2 spares



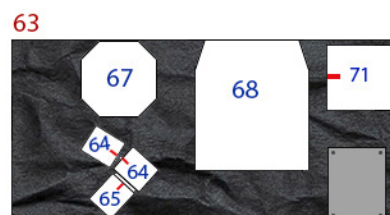
Color back Black



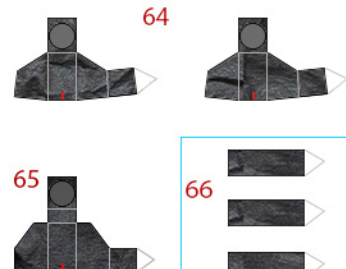
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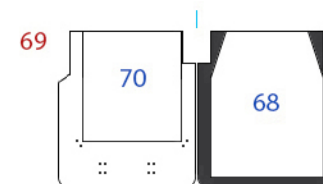
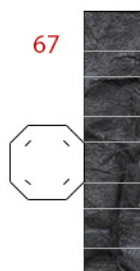
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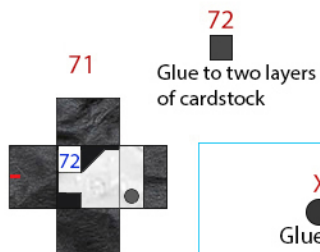
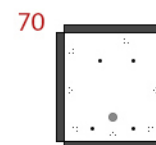
Glue to two layers of cardstock



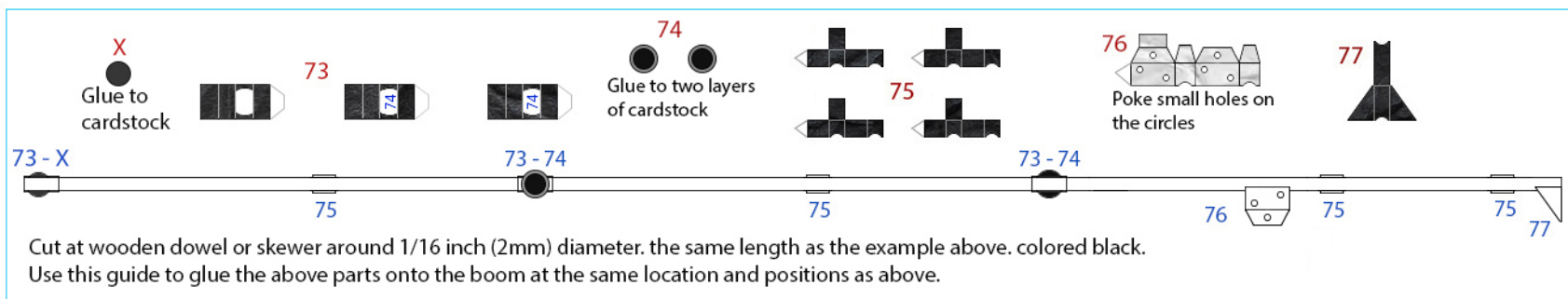
Color back Black



Fold, glue back-to-back



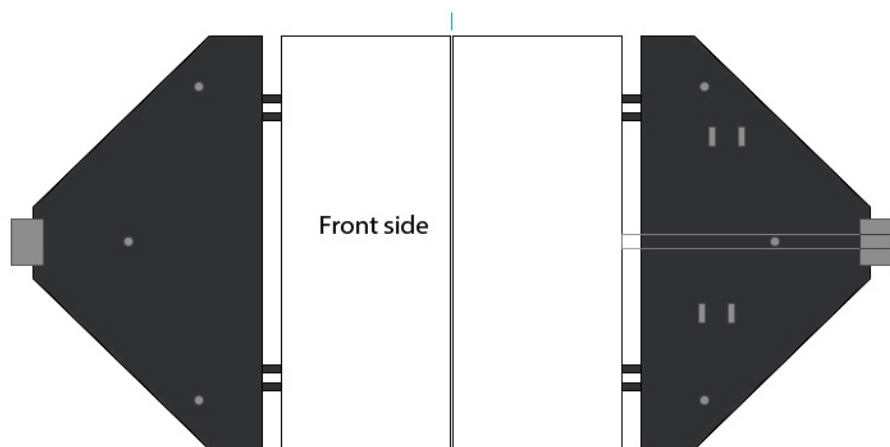
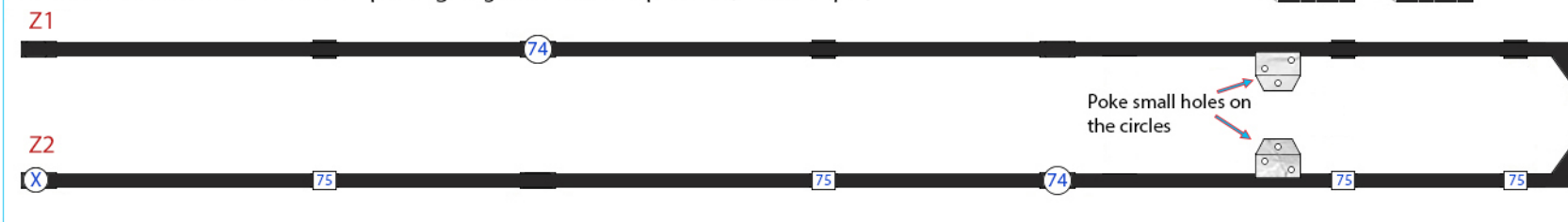
Glue to two layers of cardstock



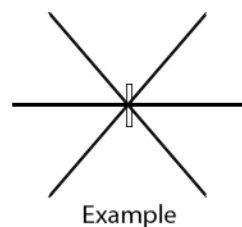
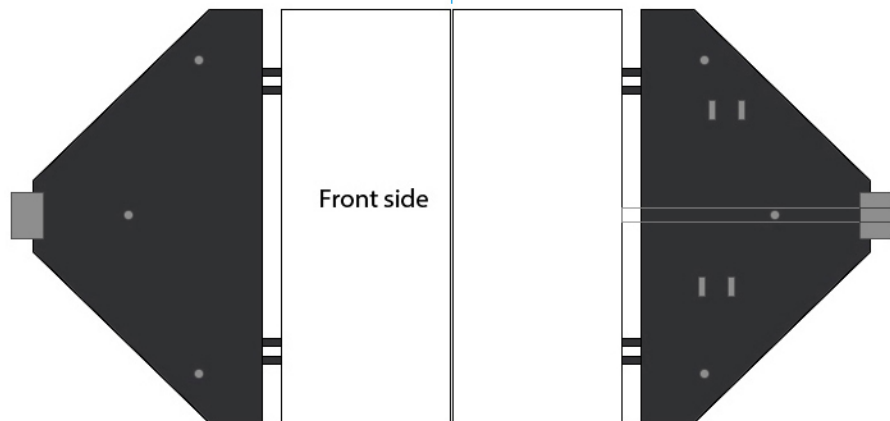
Cut three plastic broom straws or similar material the same length as the line above, colored light grey or silver for **Part 76**

Optional Boom Assembly

Poke small holes on the small circles on Z1 and Z2. Glue Z1 to cardstock, then back-to-back with Z2. Glue X, 74 and 75 to their labeled areas. Repoke the three holes. Prepare the three plastic broom straws or very thin music wires and glue through the three hole to form a "X" with the top one going across the "X" pattern (see Example)



81 Fold, glue back-to-back



Cut three plastic broom straws or similar material the same length as the line above, colored light grey or silver

Cut three plastic broom straws or similar material the same length as the line above, colored light grey or silver for the antennas.

Add a slight bend at the end.

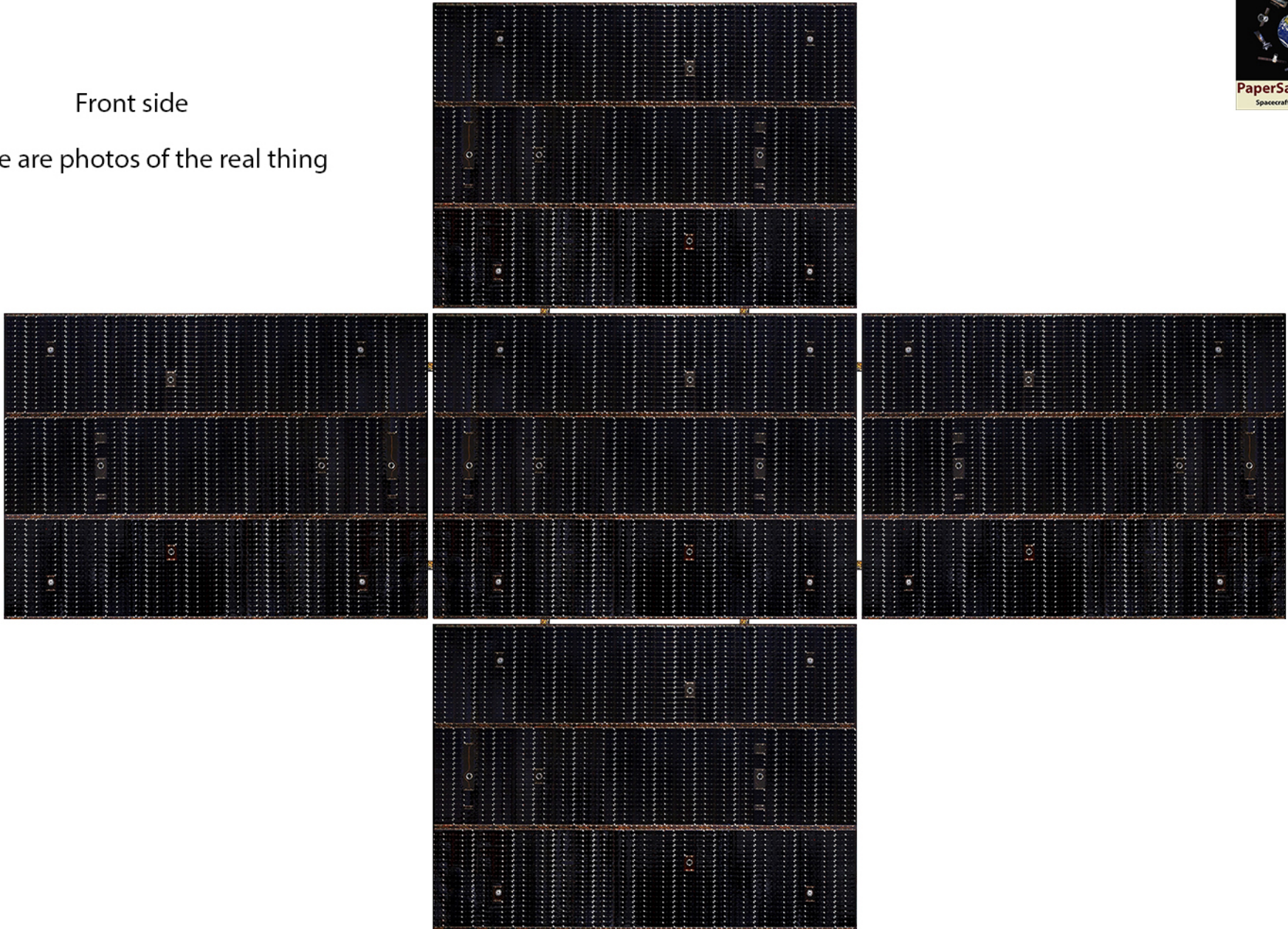
Cut two plastic broom straws or similar material the same length as the line above, colored grey for the top antennas

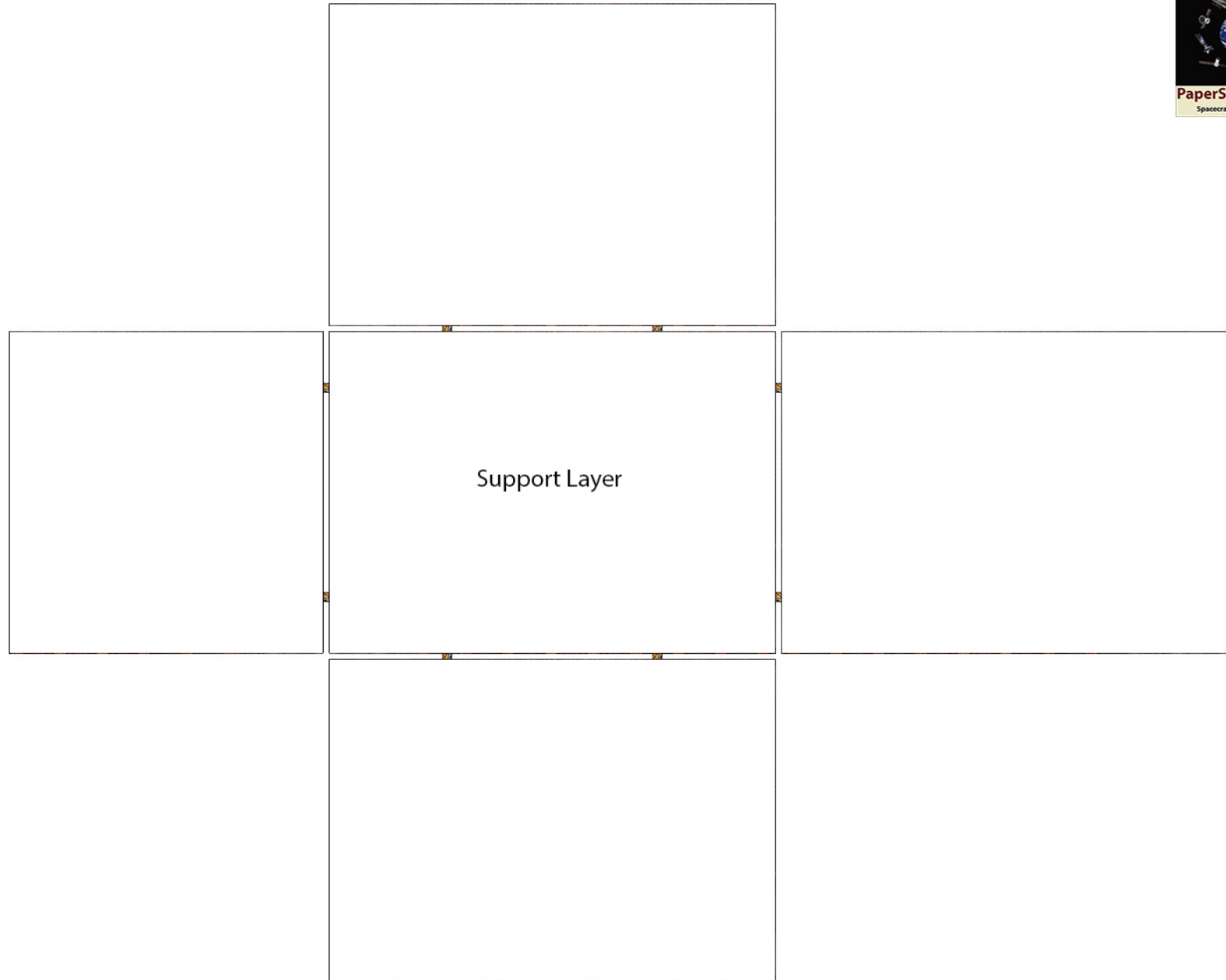
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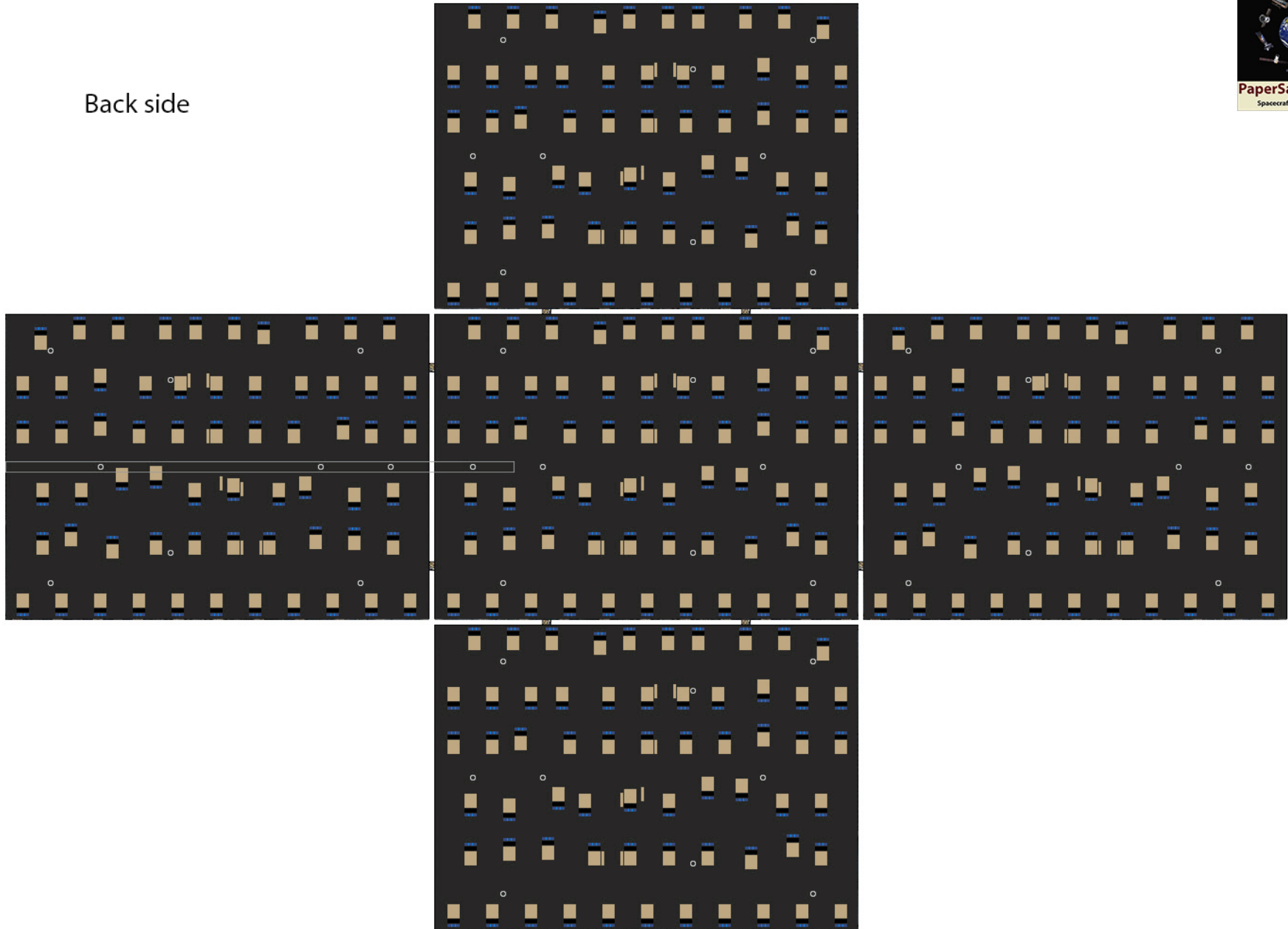
Front side

These are photos of the real thing





Back side

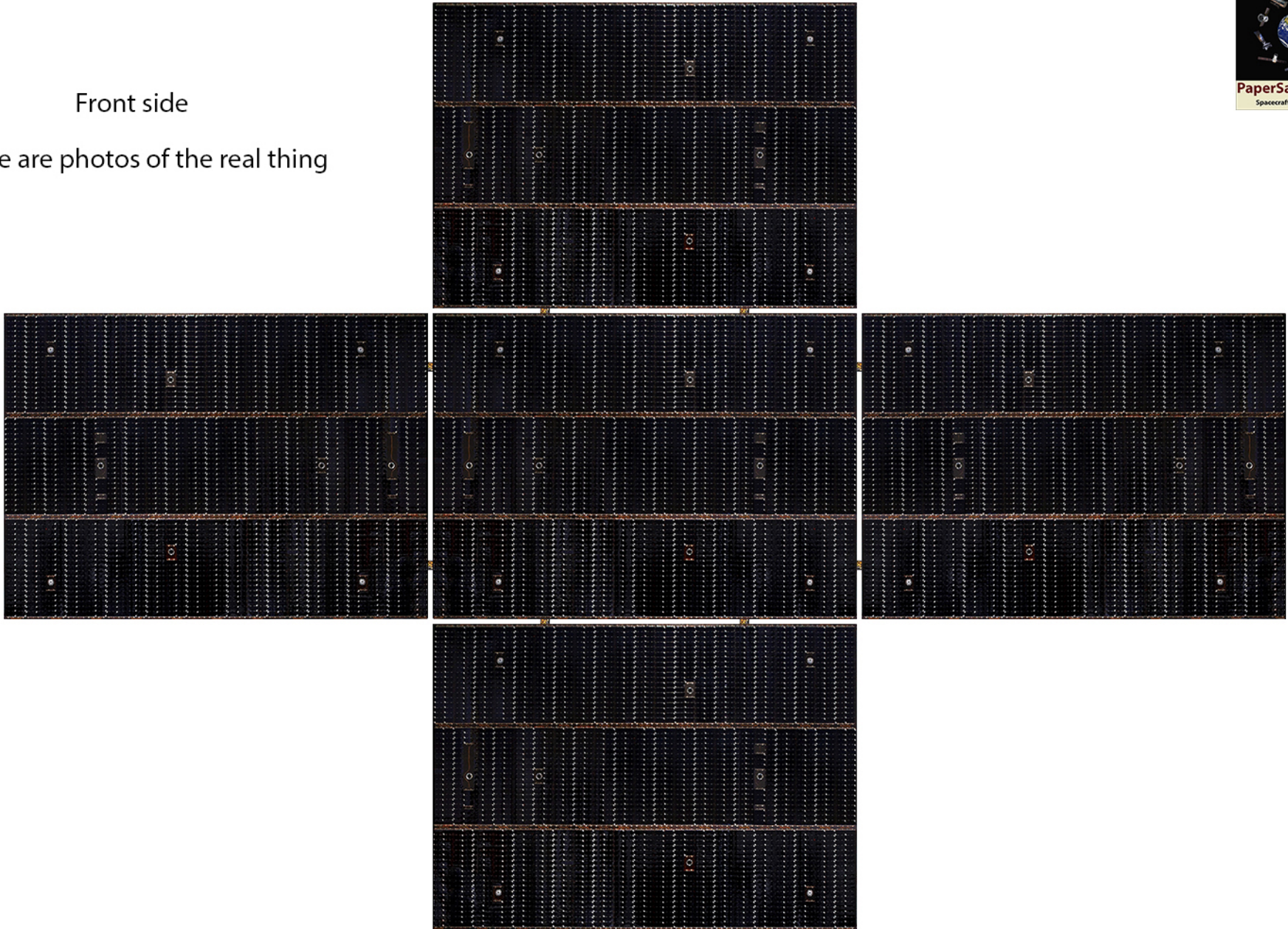


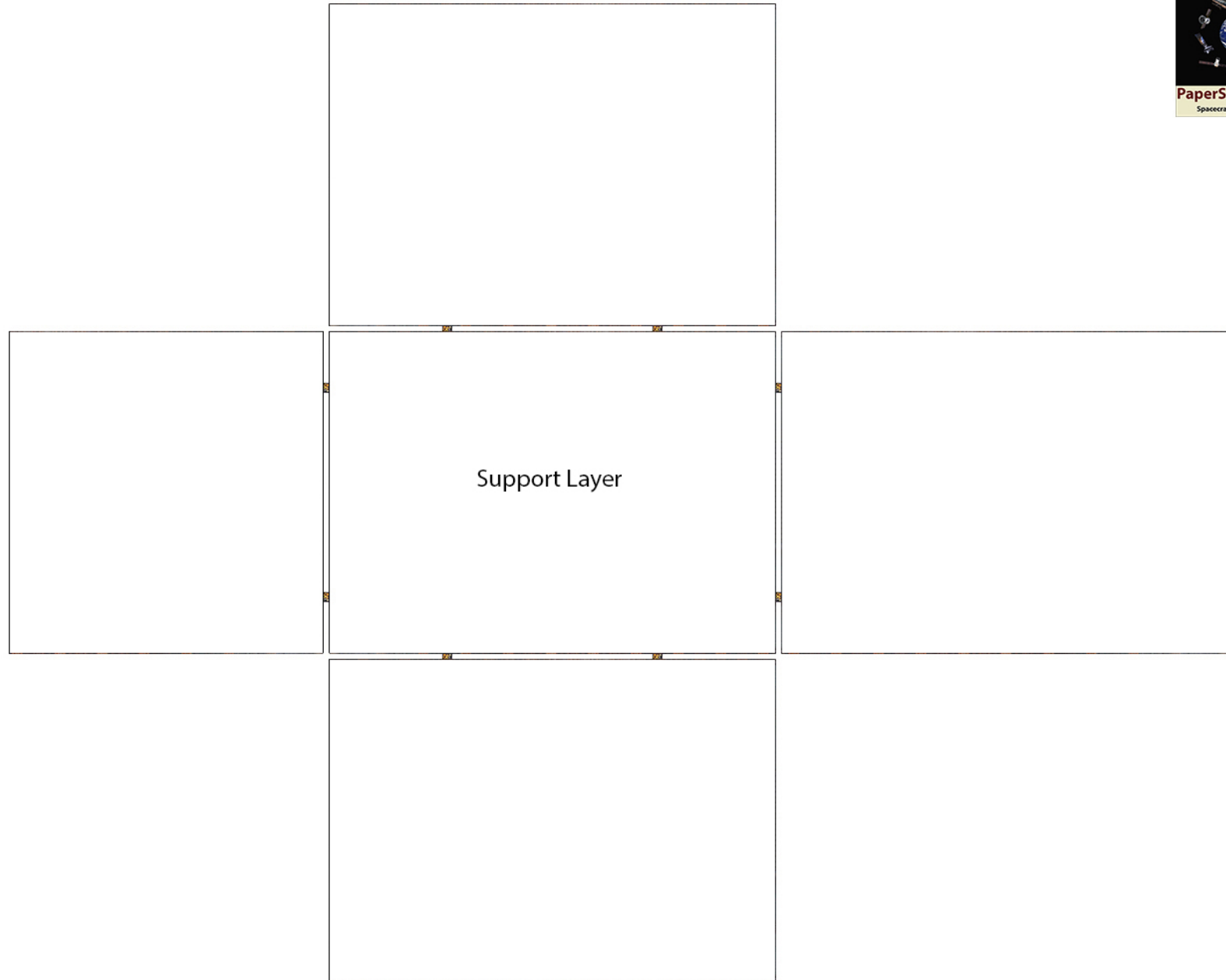
JUICE (Jupiter Icy Moons Explorer)



Front side

These are photos of the real thing





Back side

