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## SatRevolution STORK mission

Shared EO-capable platform aimed at in-orbit service provision for external payloads

Based on great interest and success of SatRevolution SWIFT mission (shared platform for in-orbit demonstration on track to launch December 2020), our team is happy to announce next mission to host external payloads and provide in-orbit services related to Earth-Observation.

STORK is a 3U CubeSat with optical payload to launch mid-2021. Aimed at EO-related service provision, we currently have capacity for external payloads. Whether you're looking for a simple in-orbit demonstration and verification, or you're building a complex business case for your Earth-Observation systems and services, SatRevolution STORK is the right opportunity for you.



<b>Overall description and features</b>	<p>3U Cubesat platform based on SatRevolution NanoBus with flight heritage.</p> <p>Equipped with SatRevolution Vision 300 optical payload and all necessary subsystems to provide service to payloads:</p> <ul style="list-style-type: none"><li>• Power system with up to 50 W of peak power for external payloads</li><li>• Optical payload with up to 5 m GSD</li><li>• Advanced attitude determination and control system with up to 0.2 degrees of pointing accuracy</li><li>• Redundant UHF communication system for command telemetry</li><li>• S-band communication system for data downlink</li><li>• All current payload interfaces available</li><li>• 36 months of mission lifetime</li><li>• Launch to 500+ km Sun-synchronous orbit in mid-2021</li><li>• Range of innovative payload and data services available</li></ul>
<b>Your business case</b>	<p>SatRevolution STORK creates value in following (but not limited to) business cases:</p> <ul style="list-style-type: none"><li>• Image processing, value-added Earth-observation services</li><li>• Demonstration of Earth-observation-oriented technologies in real-life scenarios</li><li>• Provision of services and data</li><li>• Obtaining flight heritage for your sub-systems and componentry</li></ul>



<b>External payload capacity</b>	<p>Current available payload slots:</p> <ul style="list-style-type: none"> <li>· 6x of 0,25U slots</li> <li>· 3x of 0,5U slots</li> <li>· 1x 1U slot</li> <li>· 1x tuna-can external slot</li> </ul>
<b>Payload interfaces</b>	<p>Platform can accept both standard PC104 and platform proprietary design mechanical payload interfaces. Proprietary design allows for smooth payload integration process.</p> <p>Interfaces available: I2C, SPI, UART, RS485, RS422, CAN, USB, Ethernet, DAC/ADC. Other interfaces are available on request.</p>
<b>Structure</b>	<p>Space-proven NanoBus structure:</p> <ul style="list-style-type: none"> <li>· CNC manufactured of Aluminium 6061, 5083, 6082 alloy</li> <li>· Hard anodized and oxidized</li> <li>· Up to 2 safety deployment switches and 1 RBF pin</li> <li>· Two separation springs</li> </ul>
<b>Power</b>	<p>Power management system is based on complex of Energy Harvesting System; Battery Management System; Auxiliary Power System (payload power supply).</p> <ul style="list-style-type: none"> <li>· Peak power 75 W</li> <li>· System redundancy, autonomous fault handling and recovery</li> <li>· Battery supervisory circuit</li> <li>· Hardware protection from excessive discharge</li> <li>· Hardware MPPT implementation</li> <li>· User programable up to 6 A maximum battery pack load current</li> <li>· Available power supply: 1.8 V, 3.3 V, 5 V, 12 V and unregulated battery voltage</li> </ul>
<b>On-board computing</b>	<p>Space-proven command and data handling module with following capabilities:</p> <ul style="list-style-type: none"> <li>· Main processor: up to 216 MHz, 2 MB FLASH</li> <li>· Storage memory: from 1 GB up to 16 GB NAND FLASH</li> <li>· External program memory: up to 3 MB with hardware Forward Error Correction</li> <li>· Payload interfaces: I2C, SPI, UART, RS485, RS422, CAN, USB, Ethernet, DAC/ADC</li> <li>· Multiple temperature sensors</li> <li>· Power supply: independent DC/DC converter</li> <li>· Over-The-Air update capability</li> </ul>

<p><b>Communications</b></p>	<p>Redundant low frequency communication module</p> <ul style="list-style-type: none"> <li>· Two independent radio transceivers</li> <li>· Frequency range: 400-440 MHz (optionally 120-500 MHz)</li> <li>· Transmission data rate 9,6 kb/s</li> <li>· RF output power: 30 dBm (reconfiguration available on request)</li> <li>· External program memory: up to 1 MB with hardware Forward Error Correction</li> <li>· Radio Sensitivity: -120 dBm</li> <li>· Over-The-Air update capability</li> </ul> <p>S-band communication module</p> <ul style="list-style-type: none"> <li>· S-band frequency range: 2200 – 2290 MHz or 2400-2450 MHz</li> <li>· RF output power: 30 dBm</li> <li>· S-band transmission rate: 3.5 – 10.5 Mb/s</li> <li>· External program memory: up to 1 MB with hardware Forward Error Correction</li> <li>· Over-The-Air update capability</li> </ul>
<p><b>Guidance, navigation and control</b></p>	<p>Platform is equipped with following attitude determination and control subsystems:</p> <ul style="list-style-type: none"> <li>· Space-proven advance flight computer</li> <li>· 3x magnetorquers</li> <li>· 3x reaction wheels</li> <li>· 1x coarse sun-sensor</li> <li>· 1x fine sun-sensor</li> <li>· 1x magnetometer 3-axis</li> <li>· 1x gyroscope 3-axis</li> <li>· 1x GPS receiver</li> </ul> <p>Guaranteed platform accuracy: &lt;1 degree of positioning accuracy; &lt;1 degree of pointing accuracy</p>
<p><b>Optical capabilities</b></p>	<p>Platform is carrying SatRevolution Vision 300 optical payload with additional processing capabilities.</p> <ul style="list-style-type: none"> <li>· Bands: 3 (R, G, B)</li> <li>· Ground Sample Distance (GSD): 5.8 m @500 km</li> <li>· Field of View (FoV): 14.2 x 11.8 km @500 km; angle of view (AoV): 1.62° x 1.35°</li> <li>· Maximum image area per orbit: 3800 km<sup>2</sup></li> <li>· Daily coverage: 61400 km<sup>2</sup></li> <li>· On-board memory: FRAM 64 GB</li> <li>· Single image resolution: 2456 x 2054 px</li> <li>· Focal length: 300 mm; aperture – f/5.6</li> <li>· 8, 10, 12-bit processing</li> </ul>

<b>Mission timeline</b>	<ul style="list-style-type: none"> <li>· July-August 2020 – external payload design and readiness review</li> <li>· September-October 2020 – external payload design finalization</li> <li>· November 2020 – provision of payload engineering models</li> <li>· December 2020 – provision of payload flight models</li> <li>· January 2021 – payload integration</li> <li>· February-March 2021 – satellite integration and testing campaign</li> <li>· April 2021 – delivery for launch</li> <li>· June 2021 – launch</li> <li>· July 2021-June 2024 – in-orbit service provision</li> </ul>
<b>Payload services</b>	<ul style="list-style-type: none"> <li>· Payload design review</li> <li>· Platform provision</li> <li>· Assembly, integration and testing</li> <li>· Campaign management</li> <li>· Launch event</li> <li>· Platform and payload commissioning</li> <li>· Payload in-orbit operations and service provision</li> </ul>

<https://satrevolution.com/products/stork-mission/>

[contact@satrevolution.com](mailto:contact@satrevolution.com)

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