

Mars2020 SuperCam Instrument Product Label Keyword Definitions, Values - VICAR Sort

Dictionary:PDS4 Keyword VICAR Property. VICAR Keyword	General Definition Mars 2020-Specific Information	XPath	
		Valid Values (attribute) Children (class)	Data Type Units
msn_surface:activity_id IDENTIFICATION. ACTIVITY_ID	Identifier specifying the activity this observation is a part of. Mars 2020 Specific: <i>The general operational usage of this field is to group related datasets together by science or engineering applicaiton or theme, such as frames in a mosaic.</i>	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Observational Intent/activity_id	ASCII_Short_String_Collapsed
msn_surface:application_id TELEMETRY. APPLICATION_PROCESS_ID	The application_id (often abbreviated APID) attribute identifies the process, or source, which created the data. This can include information such as an identification of the instrument which generated the telemetry stream, its operating mode at the time of data acquisition, and any onboard compression of the data. Mars 2020 Specific: <i>For M2020, the Application Process Identifier (APID) identifies the data type encapsulated in the packet, including whether the packet is a data product packet or a non-data product packet. M2020 shall implement the following APID assignments (all numbers below are in decimal, all ranges are inclusive):</i> a) APID 2047 is used for Idle Packets. b) APID 2040-2046 will not be produced by M2020 as these APIDs are reserved by the CCSDS standard. c) APID 0 will not be produced by M2020 . d) APID 1 is reserved for X-band time correlation packets. e) APIDs 2-99 are assigned to non-data product packets. Individual values will be assigned to particular packet types as they are identified. Definitions of these packet formats are defined in this document. Definition of APID assignments is included in the Rover Flight Software APID XML. f) APIDs 100-2039 are assigned to RCE Flight Software data product packets. Definition of APID assignments is included in the Rover Flight Software APID XML. g) APIDs 1500-2039 are reserved for SSE (Simulation and Support Equipment) product types. (Above text from M2020 FGICD Volume 1, Rev A) <i>For M2020, only APID Names uniquely identify Data Product types across all FSW versions. For this reason, the integer APIDs are not documented here.</i> See also APPLICATION_PROCESS_NAME and Appendix A.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/application_id	ASCII_NonNegative_Integer
msn_surface:application_name TELEMETRY. APPLICATION_PROCESS_NAME	The application_name attribute provides the name associated with the source or process which created the data. Mars 2020 Specific: <i>For M2020, only APID Names uniquely identify Data Product types across all FSW versions.</i> See also APPLICATION_PROCESS_ID and Appendix A.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/application_name	ASCII_Short_String_Collapsed
geom:index_value_string ARM_ARTICULATION_STATE. ART_DEV_COMPONENT_STATE_NAME	The index_value attribute provides the string value as named by the associated index_id or index_name.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Component State[*]/Device Component State Index[*]/index_value_string 1) "NO CONTACT" 2) "CONTACT"	ASCII_Short_String_Collapsed
geom:selected_instrument_id ARM_ARTICULATION_STATE. ARTICULATION_DEV_INSTRUMENT_ID	The selected_instrument_id attribute specifies an abbreviated name or acronym that identifies the selected instrument mounted on the articulation device.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/selected_instrument_id	

		<ol style="list-style-type: none"> 1) "TURRET" 2) "DRILL" 3) "DOCKING POST" 4) "PIXL" 5) "GDRT" 6) "FCS" 7) "WATSON" 8) "SHERLOC" 9) "CUSTOM TCP" 	ASCII_Short_String_Collapsed
<p>geom:Vector_Device_Gravity</p> <p>ARM_ARTICULATION_STATE. ARTICULATION_DEV_VECTOR CHASSIS_ARTICULATION_STATE. ARTICULATION_DEV_VECTOR</p>	<p>The Vector_Device_Gravity class is a unit vector that specifies the direction of an external force acting on the articulation device, in the spacecraft's coordinate system, at the time the pose was computed.</p> <p>Mars 2020 Specific: For M2020 the raw gravity value comes from getting a measured delta velocity vector in m/s, scaling by the rti rate to get m/s/s, scaling by -1 to get the gravity vector, rotating from the RIMU frame to the RNAV frame, and including a parameterized correction bias. In earth testbed the values recorded were an accurate reading of Earth gravity: 9.8m/s/s. On the surface of Mars the expected values are 3.71m/s/s</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector Device Gravity</p> <p>1) GRAVITY</p>	
<p>geom:Vector_Device_Gravity</p> <p>ARM_ARTICULATION_STATE. ARTICULATION_DEV_VECTOR_NAME</p>	<p>The Vector_Device_Gravity class is a unit vector that specifies the direction of an external force acting on the articulation device, in the spacecraft's coordinate system, at the time the pose was computed.</p> <p>Mars 2020 Specific: For M2020 the raw gravity value comes from getting a measured delta velocity vector in m/s, scaling by the rti rate to get m/s/s, scaling by -1 to get the gravity vector, rotating from the RIMU frame to the RNAV frame, and including a parameterized correction bias. In earth testbed the values recorded were an accurate reading of Earth gravity: 9.8m/s/s. On the surface of Mars the expected values are 3.71m/s/s</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector Device Gravity</p> <p>1) GRAVITY</p>	
<p>geom:index_value_angle</p> <p>* ARTICULATION_STATE. ARTICULATION_DEVICE_ANGLE</p>	<p>The index_value_angle attribute provides the value of an angle as named by the associated index_id, index_name, or index_sequence_number.</p> <p>Mars 2020 Specific: Values are in radians.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Angle/Device Angle Index[*]/index_value_angle</p>	<p>ASCII_Real</p> <p>Units_of_Angle</p>
<p>geom:device_id</p> <p>* ARTICULATION_STATE. ARTICULATION_DEVICE_ID</p>	<p>The device_id attribute specifies the abbreviated identification of an articulation device.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/device_id</p> <ol style="list-style-type: none"> 1) "CHASSIS" 2) "HGA" 3) "RSM" 4) "ARM" 5) "SHA" 6) "SCS" 7) "DRILL" 	ASCII_Short_String_Collapsed
<p>geom:device_mode</p> <p>CHASSIS_ARTICULATION_STATE. ARTICULATION_DEVICE_MODE DRILL_ARTICULATION_STATE. ARTICULATION_DEVICE_MODE GRAPPLE_ARTICULATION_STATE. ARTICULATION_DEVICE_MODE HGA_ARTICULATION_STATE. ARTICULATION_DEVICE_MODE RSM_ARTICULATION_STATE. ARTICULATION_DEVICE_MODE SCS_ARTICULATION_STATE. ARTICULATION_DEVICE_MODE</p>	<p>The device_mode attribute specifies the deployment state (i.e., physical configuration) of an articulation device at the time of data acquisition. Examples include 'Arm Vibe', 'Deployed', 'Free Space', 'Stowed'. Note: the value set for this attribute is mission-specific and should be declared in a mission-specific dictionary.</p> <p>Mars 2020 Specific: The SCS tube states are defined as followed: a) "EMPTY" - tube has not been used to collect a sample. b) "FILLED" - tube has been used to collect a sample (regardless of volume). c) "SEAL DISPENSED" - seal has been inserted into the tube, but not sealed. d) "SEAL ACTIVATED" - tube is sealed.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/device_mode</p> <ol style="list-style-type: none"> 1) "EMPTY" 2) "FILLED" 3) "SEAL DISPENSED" 4) "SEAL ACTIVATED" 	ASCII_Short_String_Collapsed
<p>geom:device_name</p> <p>* ARTICULATION_STATE. ARTICULATION_DEVICE_NAME ARM_ARTICULATION_STATE.</p>	<p>The device_name attribute specifies the common name of an articulation device.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/device_name</p>	

ARTICULATION_DEVICE_NAME		1) "MOBILITY CHASSIS" 2) "HIGH GAIN ANTENNA" 3) "REMOTE SENSING MAST" 4) "SAMPLE ARM" 5) "SAMPLE HANDLING ARM" 6) "SAMPLE CACHE SYSTEM" 7) "DRILL"	ASCII_Short_String_Collapsed
geom:index_value_temperature * ARTICULATION_STATE. ARTICULATION_DEVICE_TEMP	The index_value_temperature attribute provides the value of a temperature as named by the associated index_id or index_name.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Temperature/Device Temperature Index[*]/index_value_temperature	ASCII_Real Units_of_Temperature
geom:index_value_number * ARTICULATION_STATE. ARTICULATION_DEVICE_TEMP_COUNT	The index_value_number attribute provides the value with no applicable units as named by the associated index_id or index_name.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index[*]/index_value_number 2)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index[*]/index_value_number 3)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Present/Coordinate Space Indexed/Coordinate Space Index[*]/index_value_number 4)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index/index_value_number 5)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Motion Counter/Motion Counter Index[*]/index_value_number	ASCII_Real
msn_surface:auto_delete_flag TELEMETRY.AUTO_DELETE_FLAG	Indicates if the product was to be automatically deleted onboard after it is transmitted.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/auto_delete_flag	ASCII_Boolean
msn_surface:boot_counter TELEMETRY.BOOT_COUNT	Counter indicating the number of times the spacecraft flight software has been booted. The intent is that this is a global counter that can uniquely identify the current FSW boot, so other counters that reset at boot time can be disambiguated.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/boot_counter	ASCII_Short_String_Collapsed
mars2020:bu_hardware_identifier GENERIC_PACKET_HEADER_DATA_ELEMENT.BU_HARDWARE_IDENTIFIER	Hardware identifier for a specific BU CNDH board. Used to know which SOH engineering unit conversion factors to apply to the data.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/bu_hardware_identifier	ASCII_Integer
mars2020:bu_software_version GENERIC_PACKET_HEADER_DATA_ELEMENT.BU_SOFTWARE_VERSION	Unique identifier for the software version. Is a unix timestamp of when the software was built.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/bu_software_version	ASCII_Integer
mars2020:cndh_firmware_version GENERIC_PACKET_HEADER_DATA_ELEMENT.CNDH_FIRMWARE_VERSION	Unique identifier for the CNDH firmware version. Is a unix timestamp of when the firmware was built.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/cndh_firmware_version	ASCII_Integer
msn_surface:command_dispatch_sclk TELEMETRY.COMMAND_DISPATCH_SCLK	Specifies the spacecraft clock time at which the command execution was started. Mars 2020 Specific: <i>The subseconds for this SCLK are expressed not in milliseconds but rather in counts, where each count is 1/65536 of a second. This is indicated in the PDS4 label (but not the VICAR/ODL label) by a ":" rather than a "." separating the integer and subsecond components of the SCLK.</i>	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/command_dispatch_sclk	ASCII_Short_String_Collapsed
msn_surface:command_sequence_number IDENTIFICATION.COMMAND_SEQUENCE_NUMBER	The command_sequence_number attribute provides a numeric identifier for a sequence of commands sent to a spacecraft or instrument. Mars 2020 Specific: <i>For M2020, this is the command number which identifies the specific generating command within the specified sequence.</i>	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/command_sequence_number	ASCII_NonNegative_Integer
msn_surface:communication_session_id	Identifies the communication session used to acquire this data. Mars 2020 Specific:	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/communication_session_id	

TELEMETRY. COMMUNICATION_SESSION_ID	For M2020, this is the active communication session ID at the time of MPDU (Metadata Protocol Data Unit) creation. The MPDU is the first PDU (Protocol Data Unit) produced for a data product, and contains general and M2020 specific metadata. It is wholly contained in a single packet. A value of 0 means the value is not set.		ASCII_Short_String_Collapsed
geom:index_value_string ARM_ARTICULATION_STATE. CONTACT_SENSOR_STATE	The index_value attribute provides the string value as named by the associated index_id or index_name.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Component State[*]/Device Component State Index[*]/index value string	
		1) "NO CONTACT" 2) "CONTACT"	ASCII_Short_String_Collapsed
geom:coordinate_space_frame_type * COORDINATE_SYSTEM_NAME	The coordinate_space_frame_type attribute identifies the type of frame being described, such as SITE, LOCAL_LEVEL, LANDER, ROVER, ARM, etc. When combined with Coordinate_Space_Index and the optional solution_id in the Coordinate_Space_Indexed class, this serves to fully name an instance of a coordinate space.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Present/Coordinate Space Indexed/coordinate space frame type 2)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Reference/Coordinate Space Indexed/coordinate space frame type 3)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/Coordinate Space Reference/Coordinate Space Indexed/coordinate space frame type 4)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Present/Coordinate Space Indexed/coordinate space frame type 5)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Reference/Coordinate Space Indexed/coordinate space frame type	
		1) "SITE_FRAME" 2) "ROVER_NAV_FRAME" 3) "ROVER_MECH_FRAME" 4) "LOCAL_LEVEL_FRAME" 5) "RSM_HEAD_FRAME" 6) "ARM_TURRET_FRAME" 7) "ARM_DRILL_FRAME" 8) "ARM_DOCKING_POST_FRAME" 9) "ARM_PIXL_FRAME" 10) "ARM_GDRT_FRAME" 11) "ARM_FCS_FRAME" 12) "ARM_WATSON_FRAME" 13) "ARM_SHERLOC_FRAME" 14) "ARM_CUSTOM_TCP_FRAME" 15) "PIXL_BASE_FRAME" 16) "PIXL_SENSOR_FRAME" 17) "HELL_G_FRAME" 18) "HELL_M_FRAME" 19) "HELL_S1_FRAME" 20) "HELL_S2_FRAME" 21) "CINT_FRAME" 22) "MCMF_FRAME" 23) "MCZ_CAL_PRIMARY" 24) "DRILL_BIT_TIP" 25) "MEDA_RDS"	ASCII_Short_String_Collapsed
mars2020:data_definition_version GENERIC_PACKET_HEADER_DATA_ELEMENTS. DATA_DEFINITION_VERSION	Version number of the instrument command dictionary, which defines specifics of each command parameter, and the structure of individual data products like SOH.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/data definition version	ASCII_Integer
geom:index_value_string INSTRUMENT_STATE_PARAMS. DEVICE_COMPONENT_STATE	The index_value attribute provides the string value as named by the associated index_id or index_name.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Component State[*]/Device Component State Index[*]/index value string	
		1) "NO CONTACT" 2) "CONTACT"	ASCII_Short_String_Collapsed
msn_surface:download_priority TELEMETRY. DOWNLOAD_PRIORITY	The download_priority attribute specifies which data to downlink/transmit, based on order of importance. The ranking and meaning of specific values will vary depending on the mission, and should be defined in the mission software interface specification (SIS). Mars 2020 Specific: Lower numerical values have the higher priority. For example, a product with a priority of 25 will be transmitted before one with a priority of 50. Values are 0-101 for M2020.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/download priority	ASCII_NonNegative_Integer

msn_surface:earth_received_start_date_time TELEMETRY. EARTH_RECEIVED_START_TIME	The earth_received_start_date_time attribute provides the earliest time at which any component telemetry data for a particular product was received.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/earth received start date time ASCII_Date_Time_YMD_UTC
msn_surface:earth_received_stop_date_time TELEMETRY. EARTH_RECEIVED_STOP_TIME	The earth_received_stop_date_time attribute provides the latest time at which any component telemetry data for a particular product was received.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/earth received stop date time ASCII_Date_Time_YMD_UTC
msn_surface:expected_packets TELEMETRY. EXPECTED_PACKETS	The expected_packets attribute provides the total number of telemetry packets which constitute a complete data product, i.e., a data product without missing data. Mars 2020 Specific: For M2020, telemetry data processing does not track "packets", but instead data product "parts"	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/expected_packets ASCII_NonNegative_Integer
msn_surface:expected_transmission_path TELEMETRY. EXPECTED_TRANSMISSION_PATH	Specifies the planned transmission path (route) for the telemetry data. See also transmission_path and communication_session_id.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/expected_transmission_path ASCII_Short_String_Collapsed
Internal_Reference DERIVED_IMAGE_PARAMS. FLAT_FIELD_FILE_NAME	The Internal_Reference class is used to cross-reference other products in PDS4-compliant registries of PDS and its recognized international partners. Mars 2020 Specific: Specifies the name of the flat field file used for radiometric correction. This file should be in the calibration collection.	1)/ Product Collection/Reference List/Internal Reference[*] 2)/ Product Document/Context Area/Investigation Area/Internal Reference 3)/ Product Document/Context Area/Observing System/Observing System Component/Internal Reference 4)/ Product Bundle/Context Area/Investigation Area/Internal Reference 5)/ Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference 6)/ Product Bundle/Context Area/Target Identification/Internal Reference 7)/ Product Bundle/Reference List/Internal Reference[*] 8)/ Product Collection/Context Area/Investigation Area/Internal Reference 9)/ Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference 10)/ Product Collection/Context Area/Target Identification/Internal Reference 11)/ Product Observational/Observation Area/Investigation Area/Internal Reference 12)/ Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference 13)/ Product Observational/Observation Area/Target Identification/Internal Reference 14)/ Product Observational/Reference List/Internal Reference[*] 1) lid_reference 2) lidvid_reference 3) reference_type 4) comment

<p>lid_reference</p> <p><i>DERIVED_IMAGE_PARAMS. FLAT_FIELD_FILE_NAME</i></p>	<p>The lid_reference attribute provides the logical_identifier for a product.</p>	<p>1)/Product Collection/Reference List/Internal Reference[*]/lid_reference</p> <p>2)/Product Document/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>3)/Product Document/Context Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>4)/Product Bundle/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>5)/Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>6)/Product Bundle/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>7)/Product Bundle/Reference List/Internal Reference[*]/lid_reference</p> <p>8)/Product Bundle/Bundle Member Entry[*]/lid_reference</p> <p>9)/Product Collection/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>10)/Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>11)/Product Collection/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>12)/Product Observational/Observation Area/Investigation Area/Internal Reference/lid_reference</p> <p>13)/Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>14)/Product Observational/Observation Area/Target Identification/Internal Reference/lid_reference</p> <p>15)/Product Observational/Reference List/Internal Reference[*]/lid_reference</p>
<p>msn_surface:flight_software_mode</p> <p><i>TELEMETRY. FLIGHT_SOFTWARE_MODE</i></p>	<p>Specifies the active flight software mode at the time of data product creation. Interpretation of specific modes is mission-dependent.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/flight_software_mode</p> <p>1) "UNKNOWN" 2) "TEST" 3) "PRELAUNCH" 4) "LAUNCH" 5) "ECLIPSE" 6) "CRUISE" 7) "EDL_APPROACH" 8) "EDL_MAIN" 9) "SURFACE_NOMINAL" 10) "SURFACE_STANDBY" 11) "NONPRIME_TEST" 12) "NONPRIME_PRELAUNCH" 13) "NONPRIME_LAUNCH" 14) "NONPRIME_ECLIPSE" 15) "NONPRIME_CRUISE" 16) "NONPRIME_EDL_APPROACH" 17) "NONPRIME_EDL_MAIN" 18) "NONPRIME_SURFACE_NOMINAL" 19) "NONPRIME_SURFACE_STANDBY"</p> <p>ASCII_Short_String_Collapsed</p>
<p>msn_surface:flight_software_version_id</p> <p><i>TELEMETRY. FLIGHT_SOFTWARE_VERSION_ID</i></p>	<p>The flight_software_version_id attribute identifies the version of the instrument flight software used to acquire the image.</p> <p>Mars 2020 Specific: <i>The version is defined as the time of the FSW build, in seconds since 12:00:00, Jan. 1, 2000.</i></p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/flight_software_version_id</p> <p>ASCII_Short_String_Collapsed</p>
<p>mars2020:generic_data_buffer_size</p> <p><i>GENERIC_PACKET_HEADER_DATA_ELEMENT. GENERIC_DATA_BUFFER_SIZE</i></p>	<p>The number of bytes of the entire generic buffer. Includes commands, data, header, and trailer, every byte from the packet header marker through the Fletcher checksum.</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020_Parameters/SuperCam_Parameters/SuperCam_Generic_Packet_Header/generic_data_buffer_size</p> <p>ASCII_Integer</p>
<p>msn_surface:data_size</p> <p><i>TELEMETRY. IMAGE_DATA_SIZE</i></p>	<p>The data_size specifies number of bytes in the compressed data stream, not including headers.</p> <p>Mars 2020 Specific: <i>For Mastcam-Z, Watson, and ACI, specifies the size of the image data product on the camera DEA.</i></p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/data_size</p>

	For SkyCam, reports the size of the telemetered image data in bytes, i.e. the sum of the Image Data fields of all the segments of the image.		ASCII_NonNegative_Integer
geom:instrument_azimuth * DERIVED_GEOMETRY_PARAMS. INSTRUMENT_AZIMUTH	The instrument_azimuth attribute specifies the value for an instrument's rotation in the horizontal direction. It may be measured from a low hard stop, or relative to a coordinate frame. Although it may be used for any instrument where it makes sense, it is primarily intended for use in surface-based instruments that measure pointing in terms of azimuth and elevation. If this value is expressed using a coordinate system, the coordinate system is specified by the Coordinate_Space_Reference class. The interpretation of exactly what part of the instrument is being pointed is mission-specific. It could be the boresight, the camera head direction, the CAHV camera model A vector direction, or any of a number of other things. As such, for multimission use this value should be used mostly as an approximation, e.g. identifying scenes which might contain a given object. Mars 2020 Specific: For M2020, the interpretation is the boresight of the camera, defined as projecting the center of the nominal image (before downsampling or subframing) through the camera model.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/instrument_azimuth	ASCII_Real Units_of_Angle
geom:Device_Angle OBSERVATION_REQUEST_PARAMS. INSTRUMENT_COORDINATE	The Device_Angle class is a container for the set of angles between the various components or devices of the spacecraft.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device_Angle 1) local_identifier 2) geom:Device_Angle_Index	
geom:Device_Angle OBSERVATION_REQUEST_PARAMS. INSTRUMENT_COORDINATE_NAME	The Device_Angle class is a container for the set of angles between the various components or devices of the spacecraft.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device_Angle 1) local_identifier 2) geom:Device_Angle_Index	
geom:instrument_elevation * DERIVED_GEOMETRY_PARAMS. INSTRUMENT_ELEVATION	The instrument_elevation attribute specifies the value for an instrument's rotation in the vertical direction. It may be usually measured from a low hard stop, or relative to a coordinate frame. Although it may be used for any instrument where it makes sense, it is primarily intended for use in surface-based instruments that measure pointing in terms of azimuth and elevation. If this value is expressed using a coordinate system, the coordinate system is specified by the Coordinate_Space_Reference class. The interpretation of exactly what part of the instrument is being pointed is mission-specific. It could be the boresight, the camera head direction, the CAHV camera model A vector direction, or any of a number of other things. As such, for multimission use this value should be used mostly as an approximation, e.g. identifying scenes that might contain a given object. Mars 2020 Specific: For M2020, the interpretation is the boresight of the camera, defined as projecting the center of the nominal image (before downsampling or subframing) through the camera model.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/instrument_elevation	ASCII_Real Units_of_Angle
title IDENTIFICATION. INSTRUMENT_ID	The title attribute provides a short, descriptive text string suitable use as a title or brief description in display or listing of products.	1)/Product Document/Identification Area/title 2)/Product Bundle/Identification Area/title 3)/Product Collection/Identification Area/title 4)/Product Observational/Identification Area/title	UTF8_Short_String_Collapsed

<p>Observing_System_Component</p> <p><i>IDENTIFICATION. INSTRUMENT_ID</i></p>	<p>The Observing System Component class describes one or more subsystems used to collect data.</p>	<p>1)/Product Document/Context Area/Observing System/Observing System Component</p> <p>2)/Product Bundle/Context Area/Observing System/Observing System Component[*]</p> <p>3)/Product Collection/Context Area/Observing System/Observing System Component[*]</p> <p>4)/Product Observational/Observation Area/Observing System/Observing System Component</p>	
		<p>1) FRONT_HAZCAM_LEFT_A 2) FRONT_HAZCAM_LEFT_B 3) FRONT_HAZCAM_RIGHT_A 4) FRONT_HAZCAM_RIGHT_B 5) REAR_HAZCAM_LEFT 6) REAR_HAZCAM_RIGHT 7) NAVCAM_LEFT 8) NAVCAM_RIGHT 9) CACHECAM 10) SUPERCAM_RMI 11) MCZ_LEFT 12) MCZ_RIGHT 13) SHERLOC_WATSON 14) SHERLOC_ACI 15) PIXL_MCC 16) SKYCAM 17) LCAM 18) EDL_PUCAM1 19) EDL_PUCAM2 20) EDL_PUCAM3 21) EDL_DDCAM 22) EDL_RDCAM 23) EDL_RUCAM 24) EDL_MICROPHONE 25) HELI_NAV 26) HELI_RTE 27) MEDA_ENVIRONMENT 28) MOXIE 29) PIXL_ENGINEERING 30) PIXL_SPECTROMETER 31) SUPERCAM_NONIMAGE 32) SHERLOC_SPECTROMETER 33) RIMFAX_MOBILE 34) RIMFAX_STATIONARY</p>	
<p>img:device_name</p> <p><i>MINI_HEADER. INSTRUMENT_MODE_NAME</i></p>	<p>The device_name attribute supplies the formal name for an imaging instrument, an imaging instrument device, or some point on the instrument or device.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Imaging/Instrument State/Device Temperatures/Device Temperature[*]/device_name</p> <p>1) "Cover_Hall_Sensor" 2) "Filter_Hall_Sensor" 3) "Focus_Hall_Sensor"</p>	<p>ASCII_Short_String_Collapsed</p>
<p>img:device_name</p> <p><i>MINI_HEADER. INSTRUMENT_STATE_NAME</i></p>	<p>The device_name attribute supplies the formal name for an imaging instrument, an imaging instrument device, or some point on the instrument or device.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Imaging/Instrument State/Device Temperatures/Device Temperature[*]/device_name</p> <p>1) "Cover_Hall_Sensor" 2) "Filter_Hall_Sensor" 3) "Focus_Hall_Sensor"</p>	<p>ASCII_Short_String_Collapsed</p>
<p>img:temperature_value</p> <p><i>INSTRUMENT_STATE_PARMs. INSTRUMENT_TEMPERATURE</i></p>	<p>The temperature_value attribute provides the temperature, in the specified units, of some point on an imaging instrument or other imaging instrument device.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Imaging/Instrument State/Device Temperatures/Device Temperature[*]/temperature_value</p>	<p>ASCII_Real</p> <p><i>Units_of_Temperature</i></p>
<p>img:temperature_status</p> <p><i>INSTRUMENT_STATE_PARMs. INSTRUMENT_TEMPERATURE_STATUS</i></p>	<p>The temperature_status attribute defines the status of the associated temperature measurement. The status is interpreted in a device-specific way, but generally 0 indicates a successful measurement.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Imaging/Instrument State/Device Temperatures/Device Temperature[*]/temperature_status</p>	<p>ASCII_Integer</p>

<p>lid_reference</p> <p><i>DERIVED_IMAGE. INVERSE_LUT_FILE_NAME</i></p>	<p>The lid_reference attribute provides the logical_identifier for a product.</p>	<p>1)/Product Collection/Reference List/Internal Reference[*]/lid_reference</p> <p>2)/Product Document/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>3)/Product Document/Context Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>4)/Product Bundle/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>5)/Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>6)/Product Bundle/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>7)/Product Bundle/Reference List/Internal Reference[*]/lid_reference</p> <p>8)/Product Bundle/Bundle Member Entry[*]/lid_reference</p> <p>9)/Product Collection/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>10)/Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>11)/Product Collection/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>12)/Product Observational/Observation Area/Investigation Area/Internal Reference/lid_reference</p> <p>13)/Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>14)/Product Observational/Observation Area/Target Identification/Internal Reference/lid_reference</p> <p>15)/Product Observational/Reference List/Internal Reference[*]/lid_reference</p>
<p>mars2020:scam_lastats_flag</p> <p><i>SCAM Ancillary_Header_Data_Element S. LASTATS</i></p>	<p>Logical to indicate if LIBS active are statistics</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_lastats_flag</p>
<p>offset</p> <p><i>SYSTEM. LBLSIZE</i></p>	<p>The offset attribute provides the displacement of the object starting position from the beginning of the parent structure (file, record, etc.). If there is no displacement, offset=0.</p>	<p>1)/Product Observational/File Area Observational/Array_2D[*]/offset</p> <p>2)/Product Collection/File Area Inventory/Inventory/offset</p> <p>3)/Product Observational/File Area Observational/Stream Text/offset</p> <p>4)/Product Observational/File Area Observational/Header[*]/offset</p> <p>5)/Product Observational/File Area Observational/Table Binary[*]/offset</p>
<p>object_length</p> <p><i>SYSTEM. LBLSIZE</i></p>	<p>The object_length attribute provides the length of the digital object in bytes.</p>	<p>1)/Product Observational/File Area Observational/Header[*]/object_length</p>
<p>mars2020:scam_ldark</p> <p><i>SCAM Ancillary_Header_Data_Element S. LDARK</i></p>	<p>Indicates whether darks were collected after LIBS active, before LIBS active, or both</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_ldark</p> <p>1) "0"</p> <p>2) "1"</p> <p>3) "2"</p> <p>4) "3"</p>
<p>mars2020:scam_ldstats_flag</p> <p><i>SCAM Ancillary_Header_Data_Element S. LDSTATS</i></p>	<p>Logical to indicate if LIBS dark are statistics</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_ldstats_flag</p>

<p>local_mean_solar_time</p> <p>IDENTIFICATION. LOCAL_MEAN_SOLAR_TIME</p>	<p>The local_mean_solar_time attribute provides the hour angle of the fictitious mean Sun at a fixed point on a rotating solar system body.</p> <p>Mars 2020 Specific: For M2020, the valid value is embedded with a Sol value that can be different than the Sol (see PLANET_DAY_NUMBER) associated with LTST (see LOCAL_TRUE_SOLAR_TIME). The time portion of the valid value is expressed in terms of a 24-hour clock. So, in an example using Sol 27, the valid value range for the 24-hour clock would be represented as "Sol-00027M00:00:00.000" to "Sol-00027M23:59:999".</p>	<p>1)/Product Observational/Observation Area/Time Coordinates/local_mean_solar_time</p>	<p>ASCII_Short_String_Collapsed</p>
<p>local_true_solar_time</p> <p>IDENTIFICATION. LOCAL_TRUE_SOLAR_TIME</p>	<p>The local_true_solar_time (LTST) attribute provides the local time on a rotating solar system body where LTST is 12 h at the sub-solar point (SSP) and increases 1 h for each 15 degree increase in east longitude away from the SSP for prograde rotation.</p>	<p>1)/Product Observational/Observation Area/Time Coordinates/local_true_solar_time</p>	<p>ASCII_Short_String_Collapsed</p>
<p>mars2020:mu_hardware_identifier</p> <p>GENERIC_PACKET_HEADER_DATA_ELEMENT. MU_HARDWARE_IDENTIFIER</p>	<p>Hardware identifier for a specific MU board. Used to know which housekeeping engineering unit conversion factors to apply to the data.</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/mu_hardware_identifier</p>	<p>ASCII_Integer</p>
<p>mars2020:mu_version_identifier</p> <p>GENERIC_PACKET_HEADER_DATA_ELEMENT. MU_VERSION_IDENTIFIER</p>	<p>Version of the MU, response from the MU send version command.</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/mu_version_identifier</p>	<p>ASCII_Integer</p>
<p>axes</p> <p>SYSTEM. NB</p>	<p>The axes attribute provides a count of the axes.</p>	<p>1)/Product Observational/File Area Observational/Array 2D[*]/axes</p> <p>1) "2"</p>	<p>ASCII_NonNegative_Integer</p>
<p>elements</p> <p>SYSTEM. NB</p>	<p>The elements attribute provides the count of the number of elements along an array axis.</p>	<p>1)/Product Observational/File Area Observational/Array 2D[*]/Axis Array[*]/elements</p>	<p>ASCII_NonNegative_Integer</p>
<p>mars2020:number_of_sections</p> <p>GENERIC_PACKET_HEADER_DATA_ELEMENT. NUMBER_OF_SECTIONS</p>	<p>Number of command or data sections contained in this buffer. Does not include the header section or the trailer section.</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/number_of_sections</p>	<p>ASCII_Integer</p>
<p>mars2020:nv_xmit_buffer_count</p> <p>GENERIC_PACKET_HEADER_DATA_ELEMENT. NV_XMIT_BUFFER_COUNT</p>	<p>Non-volatile count of the number of times the generic buffer has been transmitted to the RCE. Acts as a unique identifier for the buffer.</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/nv_xmit_buffer_count</p>	<p>ASCII_Integer</p>
<p>geom:Vector_Origin_Offset</p> <p>* COORDINATE_SYSTEM. ORIGIN_OFFSET_VECTOR ARM_COORDINATE_SYSTEM. ORIGIN_OFFSET_VECTOR LANDER_COORDINATE_SYSTEM. ORIGIN_OFFSET_VECTOR</p>	<p>The Vector_Origin_Offset class contains attributes that specify the offset from the reference coordinate system's origin to the origin of the coordinate system. It is the location of the current system's origin as measured in the reference system.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Vector Origin_Offset</p> <p>2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Vector Origin_Offset</p> <p>1) geom:Vector_Cartesian_Position_Base 2) geom:x_position 3) geom:y_position 4) geom:z_position</p>	
<p>geom:Quaternion_Plus_Direction</p> <p>* COORDINATE_SYSTEM. ORIGIN_ROTATION_QUATERNION ARM_COORDINATE_SYSTEM. ORIGIN_ROTATION_QUATERNION LANDER_COORDINATE_SYSTEM. ORIGIN_ROTATION_QUATERNION</p>	<p>Quaternion_Plus_Direction provides the four elements of a quaternion and its direction of rotation. The two end point frames must be identified in the enclosing class. See the definition of Quaternion_Base for more details on the quaternion classes in this dictionary.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Quaternion_Plus_Direction</p> <p>2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Quaternion_Plus_Direction</p> <p>1) geom:qcos 2) geom:qsin1 3) geom:rotation_direction 4) geom:qsin2 5) geom:qsin3</p>	
<p>geom:phase_angle</p> <p>IDENTIFICATION. PHASE_ANGLE</p>	<p>The phase_angle element provides a measure of the relationship between the instrument viewing position and incident illumination (such as solar light). Phase angle is measured at the target; it is the angle between a vector to the illumination source and a vector to the instrument. If illumination is from behind the instrument, phase_angle will be small.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[2]/phase_angle</p>	

	<p>Mars 2020 Specific: The instrument viewing position is constructed using the central pixel of the image and the camera C point. SuperCam RMI only.</p>		<p>ASCII_Real</p> <p>Units_of_Angle</p>
<p>mars2020:scam_point_number</p> <p>SCAM Ancillary Header Data Element S.POINT_NUMBER</p>	Point number in the raster	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_point_number</p>	<p>ASCII_Integer</p>
<p>geom:positive_azimuth_direction</p> <p>* COORDINATE_SYSTEM. POSITIVE_AZIMUTH_DIRECTION</p>	<p>The positive_azimuth_direction attribute specifies the direction in which azimuth is measured in positive degrees for an observer on the surface of a body. The azimuth is measured with respect to the elevation reference plane. A value of 'clockwise' indicates that azimuth is measured positively clockwise, and 'counterclockwise' indicates that azimuth increases positively counter-clockwise.</p> <p>Mars 2020 Specific: For the M2020 operational coordinate frames, which follow the Mars Pathfinder convention, increasing azimuth moves in a clockwise ("CLOCKWISE") direction as viewed from above.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/positive_azimuth_direction</p> <p>2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/positive_azimuth_direction</p> <p>1) "CLOCKWISE"</p>	<p>ASCII_Short_String_Collapsed</p>
<p>geom:positive_elevation_direction</p> <p>* COORDINATE_SYSTEM. POSITIVE_ELEVATION_DIRECTION</p>	<p>The positive_elevation_direction attribute provides the direction in which elevation is measured in positive degrees for an observer on the surface of a body. The elevation is measured with respect to the azimuthal reference plane. A value of UP or ZENITH indicates that elevation is measured positively upwards, i.e., the zenith point would be at +90 degrees and the nadir point at -90 degrees. DOWN or NADIR indicates that the elevation is measured positively downwards; the zenith point would be at -90 degrees and the nadir point at +90 degrees.</p> <p>Mars 2020 Specific: For the M2020 operational coordinate frames, which follow the Mars Pathfinder convention, increasing elevation ("UP") moves towards the negative Z axis.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/positive_elevation_direction</p> <p>2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/positive_elevation_direction</p> <p>1) "UP"</p>	<p>ASCII_Short_String_Collapsed</p>
<p>proc:process_owner_institution_name</p> <p>IDENTIFICATION. PRODUCER_INSTITUTION_NAME</p>	The pprocess_owner_institution_name attribute specifies the name of the institution that owns the software process.	<p>1)/Product Observational/Observation Area/Discipline Area/Processing Information/Process/process_owner_institution_name</p> <p>1) "MULTIMISSION INSTRUMENT PROCESSING LAB 2) JET PROPULSION LAB"</p>	<p>ASCII_Short_String_Collapsed</p>
<p>msn_surface:product_completion_status</p> <p>TELEMETRY. PRODUCT_COMPLETION_STATUS</p>	<p>The product_completion_status attribute indicates whether or not a product is complete or is in one of a number of incomplete states. Sample values might indicate that all portions of the product have been downlinked and received correctly, that all portions have not yet been received, or that the product contains transmission errors. The specific values are mission-dependent.</p> <p>Mars 2020 Specific: For M2020, the valid values indicate whether it was a complete or partial product as it came out of MPCSS, and whether the checksum passed, failed, or was missing.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/product_completion_status</p> <p>1) "PARTIAL" 2) "PARTIAL_CHECKSUM_FAIL" 3) "COMPLETE_CHECKSUM_PASS" 4) "COMPLETE_NO_CHECKSUM" 5) "COMPLETE_CHECKSUM_FAIL"</p>	<p>ASCII_Short_String_Collapsed</p>
<p>creation_date_time</p> <p>IDENTIFICATION. PRODUCT_CREATION_TIME</p>	The creation_date_time attribute provides a date and time when the object was created.	<p>1)/Product Observational/File Area Observational/File/creation_date_time</p>	<p>ASCII_Date_Time_YMD</p>
<p>logical_identifier</p> <p>IDENTIFICATION. PRODUCT_ID</p>	A logical identifier identifies the set of all versions of an object. It is an object identifier without a version.	<p>1)/Product Document/Identification Area/logical_identifier</p> <p>2)/Product Bundle/Identification Area/logical_identifier</p> <p>3)/Product Collection/Identification Area/logical_identifier</p> <p>4)/Product Observational/Identification Area/logical_identifier</p>	<p>ASCII_LID</p>

version_id IDENTIFICATION. PRODUCT_ID	The version_id attribute provides the version of the product, expressed in the PDS [m.n] notation.	1)/ Product Document/Identification Area/version_id 2)/ Product Bundle/Identification Area/version_id 3)/ Product Bundle/Identification Area/Modification History/Modification Detail/version_id 4)/ Product Collection/Identification Area/version_id 5)/ Product Collection/Identification Area/Modification History/Modification Detail/version_id 6)/ Product Observational/Identification Area/version_id 7)/ Product Observational/Identification Area/Modification History/Modification Detail/version_id
alternate_id IDENTIFICATION. PRODUCT_ID	The alternate_id attribute provides an additional identifier supplied by the data provider. Mars 2020 Specific: For M2020, it is the filename minus the extension.	1)/ Product Observational/Identification Area/Alias List/Alias/alternate_id ASCII_Short_String_Collapsed
local_identifier_reference IDENTIFICATION. PRODUCT_ID	The local_identifier_reference attribute provides the value of the local_identifier of the entity described by the referencing class. Note that a local_identifier attribute, with the same value as this local_identifier_reference, must be present within the label. Mars 2020 Specific: For M2020, EDRs use a standard, predefined frame name for each occurrence. However, RDRs can use any value available in COORDINATE_SYSTEM_NAME. Despite that, only a few frame names are commonly used. "SITE_FRAME" is used for most SITE, ROVER, and LOCAL_LEVEL_CS definitions, as well as for XYZ data and many mosaics. "ROVER_NAV_FRAME" is used for most other CS definitions, surface normals, camera models, and some mosaics. "LOCAL_LEVEL_FRAME" is used for some mosaics. PIXL_SENSOR_FRAME is defined in terms of PIXL_BASE_FRAME which is itself defined (as a constant) in terms of ARM_PIXL_FRAME.	1)/ Product Observational/Observation Area/Discipline Area/Display Settings*/Local Internal Reference/local identifier reference 2)/ Product Observational/Observation Area/Discipline Area/Imaging/Local Internal Reference/local identifier reference 3)/ Product Observational/Observation Area/Discipline Area/Processing Information/Local Internal Reference/local identifier reference 4) "SITE_FRAME" 5) "SITE_FRAME" 6) "ROVER_NAV_FRAME" 7) "ROVER_NAV_FRAME" 8) "ROVER_NAV_FRAME" 9) "ROVER_NAV_FRAME" 10) "ROVER_NAV_FRAME" 11) "PIXL_BASE_FRAME" 12) "ARM_PIXL_FRAME"
lidvid_reference IDENTIFICATION. PRODUCT_ID	The lidvid_reference attribute provides the logical_identifier plus version_id, which uniquely identifies a product. Mars 2020 Specific: For M2020, this keyword indicates the PRODUCT_ID (filename minus extension) of the EDRs (not RDRs) that were used to create this product. In an EDR, this keyword exists and refers to itself; i.e. it is equivalent to PRODUCT_ID.	1)/ Product Observational/Reference List/Source Product Internal/lidvid_reference ASCII_Short_String_Collapsed
file_name IDENTIFICATION. PRODUCT_ID	The file_name attribute provides the name of a file.	1)/ Product Document/Document/Document Edition/Document File/file_name 2)/ Product Collection/File Area Inventory/File/file_name 3)/ Product Observational/File Area Observational/File/file_name ASCII_Short_String_Collapsed
unit	The unit attribute provides the unit of measurement.	1)/ Product Observational/File Area Observational/Array 2D*/Element Array/unit UTF8_Short_String_Collapsed
mars2020:scam_rastats_flag SCAM Ancillary Header Data Element S. RASTATS	Logical to indicate if Raman active are statistics	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_rastats_flag ASCII_Boolean
mars2020:rce_time_sync Generic Packet Header Data Element TS. RCE_TIME_SYNC	Last time sync value received from RCE by SuperCam RMI	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/rce_time_sync ASCII_Integer

<p>mars2020:scam_rdark</p> <p>SCAM Ancillary Header Data Element S. RDARK</p>	<p>Indicates whether darks were collected after Raman active, before Raman active, or both</p>	<p>1) Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_rdark</p> <p>1) "0" 2) "1" 3) "2" 4) "3"</p> <p>ASCII_Integer</p>
<p>mars2020:scam_rdstats_flag</p> <p>SCAM Ancillary Header Data Element S. RDSTATS</p>	<p>Logical to indicate if Raman darks are statistics</p>	<p>1) Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_rdstats_flag</p> <p>ASCII_Boolean</p>
<p>msn_surface:received_packets</p> <p>TELEMETRY. RECEIVED_PACKETS</p>	<p>The received_packets attribute provides the total number of telemetry packets actually used to construct this data product. cf. expected_packets.</p> <p>Mars 2020 Specific: For M2020, telemetry data processing does not track "packets", but instead data product "parts".</p>	<p>1) Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/received_packets</p> <p>ASCII_NonNegative_Integer</p>
<p>geom:Coordinate_Space_Index</p> <p>* REFERENCE_COORD_SYSTEM_INDEX</p>	<p>Identifies a coordinate space using an index value given in an identified list.</p>	<p>1) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index[*]</p> <p>2) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index[*]</p> <p>3) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Present/Coordinate Space Indexed/Coordinate Space Index[*]</p> <p>4) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index</p> <p>1) geom:List_Index_No_Units 2) geom:index_sequence_number 3) geom:index_name 4) geom:index_id 5) geom:index_value_number</p>
<p>local_identifier_reference</p> <p>* COORDINATE_SYSTEM. REFERENCE_COORD_SYSTEM_INDEX * DERIVED_GEOMETRY_PARMS. REFERENCE_COORD_SYSTEM_INDEX DERIVED_IMAGE_PARMS. REFERENCE_COORD_SYSTEM_INDEX GEOMETRIC_CAMERA_MODEL. REFERENCE_COORD_SYSTEM_INDEX SURFACE_MODEL_PARMS. REFERENCE_COORD_SYSTEM_INDEX</p>	<p>The local_identifier_reference attribute provides the value of the local_identifier of the entity described by the referencing class. Note that a local_identifier attribute, with the same value as this local_identifier_reference, must be present within the label.</p> <p>Mars 2020 Specific: For M2020, EDRs use a standard, predefined frame name for each occurrence. However, RDRs can use any value available in COORDINATE_SYSTEM_NAME. Despite that, only a few frame names are commonly used. "SITE_FRAME" is used for most SITE, ROVER, and LOCAL_LEVEL CS definitions, as well as for XYZ data and many mosaics. "ROVER_NAV_FRAME" is used for most other CS definitions, surface normals, camera models, and some mosaics. "LOCAL_LEVEL_FRAME" is used for some mosaics. PIXL_SENSOR_FRAME is defined in terms of PIXL_BASE_FRAME which is itself defined (as a constant) in terms of ARM_PIXL_FRAME.</p>	<p>1) Product Observational/Observation Area/Discipline Area/Display Settings[*]/Local Internal Reference/local_identifier_reference</p> <p>2) Product Observational/Observation Area/Discipline Area/Imaging/Local Internal Reference/local_identifier_reference</p> <p>3) Product Observational/Observation Area/Discipline Area/Processing Information/Local Internal Reference/local_identifier_reference</p> <p>1) "SITE_FRAME" 2) "SITE_FRAME" 3) "ROVER_NAV_FRAME" 4) "ROVER_NAV_FRAME" 5) "ROVER_NAV_FRAME" 6) "ROVER_NAV_FRAME" 7) "SITE_FRAME" 8) "ROVER_NAV_FRAME" 9) "ROVER_NAV_FRAME" 10) "PIXL_BASE_FRAME" 11) "ARM_PIXL_FRAME"</p> <p>ASCII_Local_Identifier_Reference</p>
<p>local_identifier_reference</p> <p>* COORDINATE_SYSTEM. REFERENCE_COORD_SYSTEM_NAME * DERIVED_GEOMETRY_PARMS. REFERENCE_COORD_SYSTEM_NAME DERIVED_IMAGE_PARMS. REFERENCE_COORD_SYSTEM_NAME GEOMETRIC_CAMERA_MODEL. REFERENCE_COORD_SYSTEM_NAME SURFACE_MODEL_PARMS. REFERENCE_COORD_SYSTEM_NAME</p>	<p>The local_identifier_reference attribute provides the value of the local_identifier of the entity described by the referencing class. Note that a local_identifier attribute, with the same value as this local_identifier_reference, must be present within the label.</p> <p>Mars 2020 Specific: For M2020, EDRs use a standard, predefined frame name for each occurrence. However, RDRs can use any value available in COORDINATE_SYSTEM_NAME. Despite that, only a few frame names are commonly used. "SITE_FRAME" is used for most SITE, ROVER, and LOCAL_LEVEL CS definitions, as well as for XYZ data and many mosaics. "ROVER_NAV_FRAME" is used for most other CS definitions, surface normals, camera models, and some mosaics. "LOCAL_LEVEL_FRAME" is used for some mosaics. PIXL_SENSOR_FRAME is defined in terms of PIXL_BASE_FRAME which is itself defined (as a constant) in</p>	<p>1) Product Observational/Observation Area/Discipline Area/Display Settings[*]/Local Internal Reference/local_identifier_reference</p> <p>2) Product Observational/Observation Area/Discipline Area/Imaging/Local Internal Reference/local_identifier_reference</p> <p>3) Product Observational/Observation Area/Discipline Area/Processing Information/Local Internal Reference/local_identifier_reference</p>

	<i>terms of ARM_PIXL_FRAME.</i>	<ol style="list-style-type: none"> 1) "SITE_FRAME" 2) "SITE_FRAME" 3) "ROVER_NAV_FRAME" 4) "ROVER_NAV_FRAME" 5) "ROVER_NAV_FRAME" 6) "ROVER_NAV_FRAME" 7) "SITE_FRAME" 8) "ROVER_NAV_FRAME" 9) "ROVER_NAV_FRAME" 10) "PIXL_BASE_FRAME" 11) "ARM_PIXL_FRAME" 	ASCII_Local_Identifier_Reference
msn_surface: request_id <i>IDENTIFICATION. REQUEST_ID</i>	The request_id is used to group related datasets together by science or engineering application or theme, such as frames in a mosaic.	1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/request_id	ASCII_Short_String_Collapsed
mars2020: reserved_1 <i>GENERIC_PACKET_HEADER_DATA_ELEMENT. RESERVED</i>	Reserved field for SuperCam RMI mini-header	1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/reserved_1	ASCII_Integer
geom: index_id <i>IDENTIFICATION. ROVER_MOTION_COUNTER_NAME</i>	<p>The index_id attribute supplies a short name (identifier) for the associated value in a group of related values.</p> <p>Mars 2020 Specific: <i>For the M20 rover: SITE, DRIVE, POSE, ARM, CHIMRA, DRILL, RSM, HGA, DRT, IC.</i> <i>For the M20 helicopter: FLIGHT, POS</i> <i>For the M20 LVS camera: SET, INSTANCE</i></p>	<ol style="list-style-type: none"> 1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Component State[*]/Device Component State Index[*]/index_id 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Temperature/Device Temperature Index[*]/index_id 3)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Angle/Device Angle Index[*]/index_id 4)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index[*]/index_id 5)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index[*]/index_id 6)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Present/Coordinate Space Indexed/Coordinate Space Index[*]/index_id 7)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Reference/Coordinate Space Indexed/Coordinate Space Index/index_id 8)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Motion Counter/Motion Counter Index[*]/index_id 	ASCII_Short_String_Collapsed
mars2020: se_firmware_version <i>GENERIC_PACKET_HEADER_DATA_ELEMENT. SE_FIRMWARE_VERSION</i>	Unique identifier for the SE firmware version. Is a unix timestamp of when the firmware was built.	1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/se_firmware_version	ASCII_Integer
mars2020: se_hardware_identifier <i>GENERIC_PACKET_HEADER_DATA_ELEMENT. SE_HARDWARE_IDENTIFIER</i>	Hardware identifier for a specific SE board. Used to know which SOH engineering unit conversion factors to apply to the data.	1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/se_hardware_identifier	ASCII_Integer
msn_surface: sequence_execution_count	The sequence_execution_count specifies how many times this sequence has executed since the last reset of the flight computer.	1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/sequence_execution_count	

<p>TELEMETRY. SEQUENCE_EXECUTION_COUNT</p>	<p>Mars 2020 Specific: For M2020, this means RCE (Rover Compute Element) start-up or boot, which happens every time the rover wakes up (generally daily).</p>		<p>ASCII_NonNegative_Integer</p>
<p>msn_surface:sequence_id IDENTIFICATION. SEQUENCE_ID</p>	<p>The sequence_id identifies the command sequence used to acquire this product. Mars 2020 Specific: For M20, this consists of two components. First, a 4-letter "category" which typically corresponds to the relevant FSW subsystem (e.g. "eng_" for surface engineering sequences) or payload (e.g. "zcam" for Mastcam-Z sequences). Second, a 5-digit unique number for the sequence.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/sequence_id</p>	<p>ASCII_Short_String_Collapsed</p>
<p>msn_surface:sequence_version_id IDENTIFICATION. SEQUENCE_VERSION_ID</p>	<p>The sequence_version_id identifies which of potentially several versions of a sequence_id were used to acquire this product. Mars 2020 Specific: Note that sequence versions start at 1, so a value of 0 indicates there was no sequence involved in the acquisition</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/sequence_version_id</p>	<p>ASCII_Short_String_Collapsed</p>
<p>geom:solar_azimuth * DERIVED_GEOMETRY_PARMS. SOLAR_AZIMUTH</p>	<p>The solar_azimuth attribute specifies one of two angular measurements indicating the direction to the Sun as measured from a specific point on the surface of a planet (eg., from a lander or rover). The positive direction of azimuth is set by the positive_azimuth_direction attribute in the reference coordinate space. The azimuth is measured in the clockwise or counterclockwise direction (as viewed from above) with the meridian passing through the positive spin axis of the planet (i.e., the north pole) defining the zero reference. Mars 2020 Specific: For M2020, the value in the SITE_DERIVED_GEOMETRY group is calculated using SPICE based on the time of the observation. The value in the ROVER_DERIVED_GEOMETRY group reflects what was sent in telemetry (as az/el, converted from the telemetered unit vector). Thus, even after they are converted to a common frame, the values will likely differ by a small amount, representing the difference between the rover's knowledge and the (more accurate) SPICE computation.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/solar_azimuth</p>	<p>ASCII_Real Units_of_Angle</p>
<p>geom:solar_elevation * DERIVED_GEOMETRY_PARMS. SOLAR_ELEVATION</p>	<p>The solar_elevation attribute specifies one of two angular measurements indicating the direction to the Sun as measured from a specific point on the surface of a planet (eg., from a lander or rover). The positive direction of the elevation is set by the positive_elevation_direction attribute in the reference coordinate space. The elevation is measured from the plane which is normal to the line passing between the surface point and the planet's center of mass, and that intersects the surface point. Mars 2020 Specific: For M2020, the value in the SITE_DERIVED_GEOMETRY group is calculated using SPICE based on the time of the observation. The value in the ROVER_DERIVED_GEOMETRY group reflects what was sent in telemetry (as az/el, converted from the telemetered unit vector). Thus, even after they are converted to a common frame, the values will likely differ by a small amount, representing the difference between the rover's knowledge and the (more accurate) SPICE computation.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/solar_elevation</p>	<p>ASCII_Real Units_of_Angle</p>
<p>geom:incidence_angle IDENTIFICATION. SOLAR_INCIDENCE_TARGET_ANG</p>	<p>The incidence_angle element provides a measure of the lighting condition at the intercept point. Incidence angle is the angle between the local vertical at the intercept point (surface) and a vector from the intercept point to the sun. The incidence_angle varies from 0 degrees when the intercept point coincides with the subsolar point to 90 degrees when the intercept point is at the terminator (i.e., in the shadowed or dark portion of the target body). Mars 2020 Specific: Solar incidence target angle with respect to the SuperCam Calibration Target normal vector. SuperCam RMI only.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[2]/incidence_angle</p>	<p>ASCII_Real Units_of_Angle</p>
<p>solar_longitude</p>	<p>The solar_longitude attribute provides the angle between the</p>	<p>1)/Product Observational/Observation Area/Time Coordinates/solar_longitude</p>	

<p><i>IDENTIFICATION. SOLAR_LONGITUDE</i></p>	<p>body-Sun line at the time of interest and the body-Sun line at its vernal equinox.</p>		<p>ASCII_Real <i>Units_of_Angle</i></p>
<p>msn_surface:command_source_id <i>OBSERVATION_REQUEST_PARMS . SOURCE_ID</i></p>	<p>Specifies where the command that triggered acquisition of this data came from. This may be "GROUND" for ground commanding, or the name of a flight software module that initiated the request. Mars 2020 Specific: <i>For M2020, it identifies the FSW element that requested the image, i.e. what was the source of the command. The field is based on the value for IMAGE_ID and the mappings are per convention; there is no guarantee that the mappings are used in this way during operations.</i></p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Command Execution/command_source_id 1) "GND" 2) "NAVF" 3) "NAVR" 4) "NAVS" 5) "HAFIQ" 6) "SUN" 7) "FAULT" 8) "VTT" 9) "ARMC" 10) "ARMF" 11) "WATCH" 12) "VISODOM" 13) "SPARE1" 14) "SPARE2" 15) "SPARE3" 16) "SPARE4"</p>	<p>ASCII_Short_String_Collapsed</p>
<p>lidvid_reference <i>IDENTIFICATION. SOURCE_PRODUCT_ID</i></p>	<p>The lidvid_reference attribute provides the logical_identifier plus version_id, which uniquely identifies a product. Mars 2020 Specific: <i>For M2020, this keyword indicates the PRODUCT_ID (filename minus extension) of the EDRs (not RDRs) that were used to create this product. In an EDR, this keyword exists and refers to itself; i.e. it is equivalent to PRODUCT_ID.</i></p>	<p>1)/Product Observational/Reference List/Source Product Internal/lidvid_reference</p>	<p>ASCII_Short_String_Collapsed</p>
<p>geom:spice_kernel_file_name <i>TELEMETRY. SPICE_FILE_NAME</i></p>	<p>The spice_kernel_file_name attribute provides the file name of a SPICE kernel file used to process the data or to produce geometric quantities given in the label.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/SPICE Kernel Files/SPICE Kernel Identification/spice_kernel_file_name</p>	<p>ASCII_File_Name</p>
<p>start_date_time <i>IDENTIFICATION. START_TIME</i></p>	<p>The start_date_time attribute provides the date and time appropriate to the beginning of the product being labeled. Mars 2020 Specific: <i>For M2020, the time period of interest is returned from SPICE subroutines and based on the beginning of data acquisition.</i></p>	<p>1)/Product Bundle/Context Area/Time Coordinates/start_date_time 2)/Product Collection/Context Area/Time Coordinates/start_date_time 3)/Product Observational/Observation Area/Time Coordinates/start_date_time</p>	<p>ASCII_Date_Time_YMD_UTC</p>

<p>lid_reference</p> <p><i>DERIVED_IMAGE_PARAMS. STEREO_PRODUCT_ID</i></p>	<p>The lid_reference attribute provides the logical_identifier for a product.</p>	<p>1)/Product Collection/Reference List/Internal Reference[*]/lid_reference</p> <p>2)/Product Document/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>3)/Product Document/Context Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>4)/Product Bundle/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>5)/Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>6)/Product Bundle/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>7)/Product Bundle/Reference List/Internal Reference[*]/lid_reference</p> <p>8)/Product Bundle/Bundle Member Entry[*]/lid_reference</p> <p>9)/Product Collection/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>10)/Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>11)/Product Collection/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>12)/Product Observational/Observation Area/Investigation Area/Internal Reference/lid_reference</p> <p>13)/Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>14)/Product Observational/Observation Area/Target Identification/Internal Reference/lid_reference</p> <p>15)/Product Observational/Reference List/Internal Reference[*]/lid_reference</p>
<p>stop_date_time</p> <p><i>IDENTIFICATION_STOP_TIME</i></p>	<p>The stop_date_time attribute provides the date and time appropriate to the end of the product being labeled.</p>	<p>1)/Product Bundle/Context Area/Time Coordinates/stop_date_time</p> <p>2)/Product Collection/Context Area/Time Coordinates/stop_date_time</p> <p>3)/Product Observational/Observation Area/Time Coordinates/stop_date_time</p>
<p>geom:Vector_Solar_Direction</p> <p><i>ROVER_DERIVED_GEOMETRY_PARAMS. SUN_VIEW_DIRECTION</i></p>	<p>Unit vector pointing in the direction of the Sun at the time of the observation.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[1]/Vector Solar Direction</p> <p>1) geom:Vector_Cartesian_Unit</p> <p>2) geom:x_unit</p> <p>3) geom:y_unit</p> <p>4) geom:z_unit</p>
<p>geom:Vector_Solar_Direction</p> <p><i>ROVER_DERIVED_GEOMETRY_PARAMS. SUN_VIEW_TIME</i></p>	<p>Unit vector pointing in the direction of the Sun at the time of the observation.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[1]/Vector Solar Direction</p> <p>1) geom:Vector_Cartesian_Unit</p> <p>2) geom:x_unit</p> <p>3) geom:y_unit</p> <p>4) geom:z_unit</p>

<p>lid_reference</p> <p><i>DERIVED_IMAGE_PARAMS. TARGET_INSTRUMENT</i></p>	<p>The lid_reference attribute provides the logical_identifier for a product.</p>	<ol style="list-style-type: none"> 1) Product Collection/Reference List/Internal Reference[*]/lid_reference 2) Product Document/Context Area/Investigation Area/Internal Reference/lid_reference 3) Product Document/Context Area/Observing System/Observing System Component/Internal Reference/lid_reference 4) Product Bundle/Context Area/Investigation Area/Internal Reference/lid_reference 5) Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference 6) Product Bundle/Context Area/Target Identification/Internal Reference/lid_reference 7) Product Bundle/Reference List/Internal Reference[*]/lid_reference 8) Product Bundle/Bundle Member Entry[*]/lid_reference 9) Product Collection/Context Area/Investigation Area/Internal Reference/lid_reference 10) Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference 11) Product Collection/Context Area/Target Identification/Internal Reference/lid_reference 12) Product Observational/Observation Area/Investigation Area/Internal Reference/lid_reference 13) Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/lid_reference 14) Product Observational/Observation Area/Target Identification/Internal Reference/lid_reference 15) Product Observational/Reference List/Internal Reference[*]/lid_reference
		ASCII_LID
<p>lid_reference</p> <p><i>IDENTIFICATION.TARGET_NAME</i></p>	<p>The lid_reference attribute provides the logical_identifier for a product.</p>	<ol style="list-style-type: none"> 1) Product Collection/Reference List/Internal Reference[*]/lid_reference 2) Product Document/Context Area/Investigation Area/Internal Reference/lid_reference 3) Product Document/Context Area/Observing System/Observing System Component/Internal Reference/lid_reference 4) Product Bundle/Context Area/Investigation Area/Internal Reference/lid_reference 5) Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference 6) Product Bundle/Context Area/Target Identification/Internal Reference/lid_reference 7) Product Bundle/Reference List/Internal Reference[*]/lid_reference 8) Product Bundle/Bundle Member Entry[*]/lid_reference 9) Product Collection/Context Area/Investigation Area/Internal Reference/lid_reference 10) Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference 11) Product Collection/Context Area/Target Identification/Internal Reference/lid_reference 12) Product Observational/Observation Area/Investigation Area/Internal Reference/lid_reference 13) Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/lid_reference 14) Product Observational/Observation Area/Target Identification/Internal Reference/lid_reference 15) Product Observational/Reference List/Internal Reference[*]/lid_reference
		ASCII_LID

<p>lid_reference</p> <p><i>IDENTIFICATION. TARGET_TYPE</i></p>	<p>The lid_reference attribute provides the logical_identifier for a product.</p>	<p>1)/Product Collection/Reference List/Internal Reference[*]/lid_reference</p> <p>2)/Product Document/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>3)/Product Document/Context Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>4)/Product Bundle/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>5)/Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>6)/Product Bundle/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>7)/Product Bundle/Reference List/Internal Reference[*]/lid_reference</p> <p>8)/Product Bundle/Bundle Member Entry[*]/lid_reference</p> <p>9)/Product Collection/Context Area/Investigation Area/Internal Reference/lid_reference</p> <p>10)/Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference/lid_reference</p> <p>11)/Product Collection/Context Area/Target Identification/Internal Reference/lid_reference</p> <p>12)/Product Observational/Observation Area/Investigation Area/Internal Reference/lid_reference</p> <p>13)/Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/lid_reference</p> <p>14)/Product Observational/Observation Area/Target Identification/Internal Reference/lid_reference</p> <p>15)/Product Observational/Reference List/Internal Reference[*]/lid_reference</p>
<p>msn_surface:provider_id</p> <p><i>TELEMETRY. TELEMETRY_PROVIDER_ID</i></p>	<p>The provider_id attribute identifies the organization or subsystem that supplied the telemetry data product to the producer of the raw (EDR) PDS data product. This is typically (but not always) the organization responsible for reassembling packetized data into a single product. These may vary by mission so the permissible values should be set by the mission dictionaries.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/provider_id</p> <p>1) "MPCS_M2020_DP"</p> <p>ASCII_Short_String_Collapsed</p>
<p>msn_surface:telemetry_source_checksum</p> <p><i>TELEMETRY. TELEMETRY_SOURCE_CHECKSUM</i></p>	<p>Specifies the checksum for the telemetry stream from which this product was derived.</p> <p>Mars 2020 Specific: For M2020, it is the sum of each (unsigned) byte in the data areas of all DPOs. It does not include the DPO headers. For M20 LVS, it is instead just the sum of all pixel values in the image.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/telemetry_source_checksum</p> <p>ASCII_Integer</p>
<p>msn_surface:telemetry_source_host_name</p> <p><i>TELEMETRY. TELEMETRY_SOURCE_HOST_NAME</i></p>	<p>Specifies the name of the host venue that provided the telemetry source data used in the creation of this data set.</p> <p>Mars 2020 Specific: For M2020, example is "M2020mstbgds1".</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/telemetry_source_host_name</p> <p>ASCII_Short_String_Collapsed</p>
<p>msn_surface:telemetry_source_name</p> <p><i>TELEMETRY. TELEMETRY_SOURCE_NAME</i></p>	<p>The telemetry_source_name specifies the name source of the telemetry data described in the parent class.</p> <p>Mars 2020 Specific: For M2020, in most cases this is the name of the data product, for example "MczRScidata_0123456789-00000-1.dat". For helicopter and LVS images, this is the name of the image supplied by the respective team after their preprocessing.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/telemetry_source_name</p> <p>ASCII_Short_String_Collapsed</p>
<p>msn_surface:telemetry_source_sclk_start</p> <p><i>TELEMETRY. TELEMETRY_SOURCE_SCLK_START</i></p>	<p>The telemetry_source_sclk_start attribute specifies the value of the spacecraft clock (in seconds) at the creation time of the source product from which this product was derived.</p> <p>Mars 2020 Specific: For M2020, it refers to the creation time (DVT) of the onboard DPO and comes from the secondary packet header. Note that this is the SCLK used by Data Management operationally to identify data products.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/telemetry_source_sclk_start</p> <p>ASCII_Short_String_Collapsed</p>

msn_surface:telemetry_source_size TELEMETRY. TELEMETRY_SOURCE_SIZE	Specifies the length in bytes of the telemetry stream from which this product was derived. Mars 2020 Specific: For M2020, it is the length of the user portion of the Data Product Object (DPO).	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/telemetry_source_size ASCII_Integer
msn_surface:telemetry_source_start_time IDENTIFICATION. TELEMETRY_SOURCE_START_TIME	The telemetry_source_start_time specifies the creation time of the source product from which this product was derived. It is the same as the telemetry_source_sclk_start converted to Spacecraft Event Time (SCET).	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/telemetry_source_start_time ASCII_Date_Time_DOY_UTC
msn_surface:transport_protocol TELEMETRY. TELEMETRY_SOURCE_TYPE	The transport_protocol attribute specifies the protocol used in the creation of the telemetry data products by the subsystem which generates the telemetry stream. Mars 2020 Specific: For most products, this is "DATA PRODUCT", since that's what comes down for the spacecraft. For Heli and LVS images, the value is "TEAM-GENERATED IMAGE", indicating that the "telemetry" source from the IDS perspective is an image that was pre-processed by the helicopter or LVS teams.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/transport_protocol 1) "DATA PRODUCT" 2) "TEAM-GENERATED IMAGE" ASCII_Short_String_Collapsed
msn_surface:transmission_path TELEMETRY. TRANSMISSION_PATH	Indicates the actual transmission path (route) for the telemetry data. See also expected_transmission_path and communication_session_id.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/transmission_path ASCII_Short_String_Collapsed
mars2020:scam_two_d_flag SCAM Ancillary Header Data Element S. TWO_D	Flag indicating a 2D collect	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_two_d_flag ASCII_Boolean
msn_surface:virtual_channel_id TELEMETRY. VIRTUAL_CHANNEL_ID	Specifies the type of data flowing in the telemetry virtual channel. Mars 2020 Specific: The Virtual Channel Identifier is used by M2020 to identify the RCE string generating the Transfer Frame, and to indicate the type of data flowing in the telemetry virtual channel. RCE String A is indicated by all Virtual Channel Identifier values having a '0' as the high bit (e.g., virtual channels 0 to 31); RCE String B is indicated by all Virtual Channel Identifier values having a '1' for the high bit (e.g., virtual channels 32 to 63).	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry/virtual_channel_id ASCII_Integer
mars2020:xmit_data_id GENERIC_PACKET_HEADER_DATA_ELEMENT S. XMIT_DATA_ID	The data_id parameter sent with the XMIT_DATA command	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header/xmit_data_id ASCII_Integer
mars2020:active_flight_computer	The active_flight_computer indicates which flight computer "string" (separate sets of electronics) was active when a product was acquired. For Mars 2020 there are two redundant flight computers called "strings", also known as Rover Compute Elements (RCEs). Either string, A or B, may be active at any given time.	1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/Observation Information/active_flight_computer 1) "A" 2) "B" ASCII_Short_String_Collapsed
Alias	The Alias class provides a single alternate name and identification for this product in this or some other archive or data system.	1)/ Product Observational/Identification Area/Alias List/Alias 1) alternate_id 2) alternate_title 3) comment
Alias_List	The Alias_List class provides a list of paired alternate names and identifications for this product in this or some other archive or data system.	1)/ Product Observational/Identification Area/Alias List 1) Alias
Array_2D	The Array 2D class is the parent class for all two dimensional array based classes.	1)/ Product Observational/File Area Observational/Array 2D[*]

		<ol style="list-style-type: none"> 1) Array 2) offset 3) axes 4) name 5) local_identifier 6) axis_index_order 7) md5_checksum 8) description 9) Axis_Array 10) Element_Array 11) Special_Constants 12) Object_Statistics 13) Digital_Object 14) Local_Internal_Reference 	
geom:Articulation_Device_Parameters	The Articulation_Device_Parameters class contains those attributes and sub-classes that describe an articulation device. An articulation device is anything that can move independently of the spacecraft to which it is attached. Examples include mast heads, wheel bogies, arms, filter wheel, scan platforms.	<ol style="list-style-type: none"> 1) Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[*] 1) local_identifier 2) geom:device_id 3) geom:device_name 4) geom:device_mode 5) geom:device_phase 6) geom:selected_instrument_id 7) geom:Device_Angle 8) geom:Device_Component_State 9) geom:Device_Motor_Counts 10) geom:Device_Pose 11) geom:Vector_Device_Gravity 12) geom:Vector_Device_Gravity_Magnitude 13) geom:Device_Temperature 14) geom:Coordinate_Space_Present 15) geom:Coordinate_Space_Reference 16) geom:Commanded_Geometry 	
author_list	The author_list attribute contains a semi-colon-separated list of names of people to be cited as authors of the associated product. The general format for individual names is: SURNAME, GIVEN NAME(s). Initials may be used in lieu of given name(s). If the name contains a suffix ("Jr.", "Sr.", "III", etc.) it should be placed before the comma (.). Do not include the word "and" before the final author. All authors should be listed explicitly - do not elide the list using "et al."	<ol style="list-style-type: none"> 1) Product_Document/Identification_Area/Citation_Information/author_list 2) Product_Bundle/Identification_Area/Citation_Information/author_list 3) Product_Collection/Identification_Area/Citation_Information/author_list 	UTF8_Text_Preserved
Axis_Array	The Axis Array class is used as a component of the array class and defines an axis of the array.	<ol style="list-style-type: none"> 1) Product_Observational/File_Area_Observational/Array_2D[*]/Axis_Array[*] 1) axis_name 2) local_identifier 3) elements 4) unit 5) sequence_number 6) Band_Bin_Set 	
axis_index_order	The axis_index_order attribute provides the axis index that varies fastest with respect to storage order.	<ol style="list-style-type: none"> 1) Product_Observational/File_Area_Observational/Array_2D[*]/axis_index_order 1) "Last Index Fastest" 	ASCII_Short_String_Collapsed
axis_name	The axis_name attribute provides a word or combination of words by which the axis is known.	<ol style="list-style-type: none"> 1) Product_Observational/File_Area_Observational/Array_2D[*]/Axis_Array[*]/axis_name 	ASCII_Short_String_Collapsed
Bundle	The Bundle class describes a collection of collections.	<ol style="list-style-type: none"> 1) Product_Bundle/Bundle 1) bundle_type 2) description 3) Conceptual_Object 	
Bundle_Member_Entry	The Bundle Member Entry class provides a member reference to a collection.	<ol style="list-style-type: none"> 1) Product_Bundle/Bundle_Member_Entry[*] 1) iid_reference 2) iidvid_reference 3) member_status 4) reference_type 	
bundle_type	The bundle_type attribute provides a classification for the bundle.	<ol style="list-style-type: none"> 1) Product_Bundle/Bundle/bundle_type 1) "Archive" 2) "Supplemental" 	ASCII_Short_String_Collapsed

Citation_Information	The Citation_Information class provides specific fields often used in citing the product in journal articles, abstract services, and other reference contexts.	1)/ Product Document/Identification Area/Citation Information 2)/ Product Bundle/Identification Area/Citation Information 3)/ Product Collection/Identification Area/Citation Information	
		1) author_list 2) editor_list 3) publication_year 4) doi 5) keyword 6) description	
Collection	The Collection class provides a description of a set of products.	1)/ Product Collection/Collection 1) collection_type 2) description	
collection_type	The collection_type attribute provides a classification for the collection.	1)/ Product Collection/Collection/collection_type 1) "Browse" 2) "Calibration" 3) "Context" 4) "Data" 5) "Document" 6) "Geometry" 7) "Miscellaneous" 8) "SPICE Kernel" 9) "XML Schema"	ASCII_Short_String_Collapsed
msn_surface:Command_Execution	The Command_Execution class contains information about how the command that acquired this data was executed, such as sequence or activity.	1)/ Product Observational/Observation Area/Disipline Area/Surface Mission Information/Command Execution 1) msn_surface:sequence_id 2) msn_surface:sequence_version_id 3) msn_surface:sequence_execution_count 4) msn_surface:command_sequence_number 5) msn_surface:command_source_id 6) msn_surface:command_dispatch_sclk 7) msn_surface:observation_id 8) msn_surface:request_id 9) msn_surface:boot_counter 10) msn_surface:rtt_version	
comment	The comment attribute is a character string expressing one or more remarks or thoughts relevant to the object.	1)/ Product Collection/Context Area/comment 2)/ Product Collection/Context Area/Investigation Area/Internal Reference/comment 3)/ Product Collection/Context Area/Observing System/Observing System Component["]/Internal Reference/comment 4)/ Product Collection/Context Area/Target Identification/Internal Reference/comment 5)/ Product Bundle/Context Area/Target Identification/Internal Reference/comment 6)/ Product Observational/Identification Area/Alias List/Alias/comment 7)/ Product Observational/Observation Area/Investigation Area/Internal Reference/comment 8)/ Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/comment 9)/ Product Observational/Observation Area/Target Identification/Internal Reference/comment 10)/ Product Observational/Reference List/Source Product Internal/comment	ASCII_Text_Preserved
Context_Area	The Context Area provides context information for a product.	1)/ Product Document/Context Area 2)/ Product Bundle/Context Area 3)/ Product Collection/Context Area	

		<ul style="list-style-type: none"> 1) comment 2) Time_Coordinates 3) Primary_Result_Summary 4) Investigation_Area 5) Observing_System 6) Target_Identification 7) Mission_Area 8) Discipline_Area 	
geom:Coordinate_Space_Definition	The Coordinate_Space classes are typically used for lander/rover geometry while the Coordinate_System construction is used for orbiter/flyby geometry.	<ul style="list-style-type: none"> 1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*] 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition 	<ul style="list-style-type: none"> 1) local_identifier 2) geom:positive_azimuth_direction 3) geom:positive_elevation_direction 4) geom:quaternion_measurement_method 5) geom:Coordinate_Space_Present 6) geom:Vector_Origin_Offset 7) geom:Quaternion_Plus_Direction 8) geom:Coordinate_Space_Reference 9) geom:Coordinate_Space_Quality
geom:Coordinate_Space_Indexed	The Coordinate_Space_Indexed class contains the attributes and classes identifying the indexed coordinate space.	<ul style="list-style-type: none"> 1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Present/Coordinate Space Indexed 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Reference/Coordinate Space Indexed 3)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/Coordinate Space Reference/Coordinate Space Indexed 4)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Present/Coordinate Space Indexed 5)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Reference/Coordinate Space Indexed 	<ul style="list-style-type: none"> 1) geom:coordinate_space_frame_type 2) geom:solution_id 3) geom:Coordinate_Space_Index
geom:Coordinate_Space_Present	The Coordinate_Space_Present class includes the attributes that identifies the coordinate space presently being defined.	<ul style="list-style-type: none"> 1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Present 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Present 	<ul style="list-style-type: none"> 1) geom:Coordinate_Space_Identification 2) geom:Coordinate_Space_Indexed 3) geom:Coordinate_Space_SPICE 4) Local_Internal_Reference
geom:Coordinate_Space_Quality	Parameters that indicate the quality of the coordinate space knowledge.	<ul style="list-style-type: none"> 1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Quality 	<ul style="list-style-type: none"> 1) geom:quaternion_measurement_method 2) geom:attitude_propagation_counter 3) geom:attitude_propagation_duration
geom:Coordinate_Space_Reference	The Coordinate_Space_Reference class includes the attributes that identify the coordinate space being used to express coordinates in the class in which it appears.	<ul style="list-style-type: none"> 1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Coordinate Space Reference 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]/Coordinate Space Reference 3)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Coordinate Space Reference 	<ul style="list-style-type: none"> 1) geom:Coordinate_Space_Identification 2) geom:Coordinate_Space_Indexed 3) geom:Coordinate_Space_SPICE 4) Local_Internal_Reference
copyright	The copyright attribute is a character string giving information	<ul style="list-style-type: none"> 1)/Product Document/Document/copyright 	

	about the exclusive right to make copies, license, and otherwise exploit an object, whether physical or digital.		ASCII_Text_Preserved
data_type	The data_type attribute provides the hardware representation used to store a value in Field_Binary (see PDS Standards Reference section "Binary Data Types").	<p>1)Product Observational/File Area Observational/Array 2D[*]/Element Array/data_type</p> <p>2)Product Collection/File Area Inventory/Inventory/Record Delimited/Field Delimited[*]/data_type</p> <p>3)Product Observational/File Area Observational/Table Binary[*]/Record Binary/Field Binary/data_type</p>	ASCII_Short_String_Collapsed
geom:Derived_Geometry	The Derived_Geometry class is a container for surface based observations (lander or rover). It is used to provide some geometric quantities relative to a specific Reference Coordinate Space.	<p>1)Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[*]</p> <p>2)Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry</p>	<p>1) geom:target_name</p> <p>2) geom:incidence_angle</p> <p>3) geom:emission_angle</p> <p>4) geom:phase_angle</p> <p>5) geom:instrument_azimuth</p> <p>6) geom:instrument_elevation</p> <p>7) geom:solar_azimuth</p> <p>8) geom:solar_elevation</p> <p>9) geom:start_azimuth</p> <p>10) geom:stop_azimuth</p> <p>11) geom:target_heliocentric_distance</p> <p>12) geom:solar_image_clock_angle</p> <p>13) geom:Vector_Solar_Direction</p> <p>14) geom:Coordinate_Space_Reference</p>

description	The description attribute provides a statement, picture in words, or account that describes or is otherwise relevant to the object.	<p>1)/Product Document/Identification Area/Citation Information/description</p> <p>2)/Product Bundle/Identification Area/Citation Information/description</p> <p>3)/Product Bundle/Identification Area/Modification History/Modification Detail/description</p> <p>4)/Product Bundle/Bundle/description</p> <p>5)/Product Observational/File Area Observational/Array 2D[*]/description</p> <p>6)/Product Collection/Identification Area/Citation Information/description</p> <p>7)/Product Collection/Identification Area/Modification History/Modification Detail/description</p> <p>8)/Product Collection/File Area Inventory/Inventory/Record Delimited/Field Delimited[*]/description</p> <p>9)/Product Observational/Identification Area/Modification History/Modification Detail/description</p> <p>10)/Product Observational/File Area Observational/Stream Text/description</p> <p>11)/Product Observational/File Area Observational/Header[*]/description</p> <p>12)/Product Observational/File Area Observational/Table Binary[*]/description</p> <p>13)/Product Observational/File Area Observational/Table Binary[*]/Record Binary/Field Binary/description</p>
geom:Device_Angle_Index	The Device_Angle class is a container for the set of angles the spacecraft device specified in the parent Articulation_Device_Parameters class.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Angle/Device Angle Index[*]</p> <p>1) geom:List_Index_Angle 2) geom:index_value_angle 3) geom:index_sequence_number 4) geom:index_name 5) geom:index_id</p>
geom:Device_Component_State	The Device_Component_State class is a container for the states of the various components of the articulation device.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Component State[*]</p> <p>1) local_identifier 2) geom:Device_Component_State_Index</p>
geom:Device_Component_State_Index	The Device_Component_State_Index class is a container for one state of a component of the articulation device.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Component State[*]/Device Component State Index[*]</p> <p>1) geom:List_Index_Text 2) geom:index_sequence_number 3) geom:index_name 4) geom:index_id 5) geom:index_value_string</p>
geom:Device_Temperature	The Device_Temperature class is a container for all available device temperatures of an articulated device and/or part(s) of a device.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Temperature</p> <p>1) local_identifier 2) geom:Device_Temperature_Index</p>
img:Device_Temperature	The Device_Temperature class provides a container for the temperature of some point on an imaging instrument or other imaging device.	<p>1)/Product Observational/Observation Area/Discipline Area/Imaging/Instrument State/Device Temperatures/Device Temperature[*]</p> <p>1) img:Device_Parameters 2) img:raw_count 3) img:device_name 4) img:device_id 5) img:sequence_number 6) img:temperature_value 7) img:temperature_status</p>
geom:Device_Temperature_Index	The Device_Temperature_Index class specifies the attributes describing the temperature of one device or some part of a device.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[*]/Device Temperature/Device Temperature Index[*]</p>

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		<ul style="list-style-type: none"> 1) geom:List_Index_Temperature 2) geom:index_sequence_number 3) geom:index_name 4) geom:index_id 5) geom:index_value_temperature 6) geom:index_value_number 	
img:Device_Temperatures	The Device_Temperatures class provides a container for the set of temperatures of an imaging instrument or other imaging device.	1)/ Product Observational/Observation Area/Discipline Area/Imaging/Instrument State/Device Temperatures	
		1) img:Device_Temperature	
Discipline_Area	The Discipline area allows the insertion of discipline specific metadata.	1)/ Product Observational/Observation Area/Discipline Area	
		<ul style="list-style-type: none"> 1) Geometry 2) Surface_Mission_Information 3) Processing_Information 4) Imaging 5) Display_Settings 	
disp:Display_Direction	The Display_Direction class specifies how two of the dimensions of an Array object should be displayed in the vertical (line) and horizontal (sample) dimensions of a display device.	1)/ Product Observational/Observation Area/Discipline Area/Display_Settings[*]/Display_Direction	
		<ul style="list-style-type: none"> 1) comment 2) disp:horizontal_display_axis 3) disp:horizontal_display_direction 4) disp:vertical_display_axis 5) disp:vertical_display_direction 	
disp:Display_Settings	The Display_Settings class contains one or more classes describing how data should be displayed on a display device.	1)/ Product Observational/Observation Area/Discipline Area/Display_Settings[*]	
		<ul style="list-style-type: none"> 1) Local_Internal_Reference 2) disp:Display_Direction 3) disp:Color_Display_Settings 4) disp:Movie_Display_Settings 	
Document	The Document class describes a document.	1)/ Product Document/Document	
		<ul style="list-style-type: none"> 1) revision_id 2) document_name 3) doi 4) author_list 5) editor_list 6) acknowledgement_text 7) copyright 8) publication_date 9) document_editions 10) description 11) Document_Edition 12) Digital_Object 	
Document_Edition	A Document Edition is one complete version of the document in a set of files that is distinguished by language, a unique assemblage of file formats, or some other criteria.	1)/ Product Document/Document/Document_Edition	
		<ul style="list-style-type: none"> 1) edition_name 2) starting_point_identifier 3) language 4) files 5) description 6) Document_File 	
Document_File	The Document File class describes a file which is a part of a document.	1)/ Product Document/Document/Document_Edition/Document_File	
		<ul style="list-style-type: none"> 1) File 2) directory_path_name 3) file_name 4) document_standard_id 5) local_identifier 6) creation_date_time 7) file_size 8) records 9) md5_checksum 10) comment 11) Digital_Object 	
document_standard_id	The document_standard_id attribute provides the formal name of a standard used for the structure of a document file.	1)/ Product Document/Document/Document_Edition/Document_File/document_standard_id	

		<ol style="list-style-type: none"> 1) "7-Bit ASCII Text" 2) "Encapsulated Postscript" 3) "GIF" 4) "HTML" 5) "HTML 2.0" 6) "HTML 3.2" 7) "HTML 4.0" 8) "HTML 4.01" 9) "JPEG" 10) "LaTEX" 11) "MPEG-4" 12) "Microsoft Excel" 13) "Microsoft Word" 14) "PDF" 15) "PDF/A" 16) "PNG" 17) "Postscript" 18) "Rich Text" 19) "TIFF" 20) "UTF-8 Text" 	ASCII_Short_String_Collapsed
doi	The doi attribute provides the Digital Object Identifier for an object, assigned by the appropriate DOI System Registration Agency.	<ol style="list-style-type: none"> 1)/Product Bundle/Identification Area/Citation Information/doi 2)/Product Bundle/Reference List/External Reference[*]/doi 	ASCII_DOI
domain	The radial "zone" or "shell" of the target for which the observations were collected or which are represented in the product(s). The value may depend on wavelength_range and size of the target.	<ol style="list-style-type: none"> 1)/Product Bundle/Context Area/Primary Result Summary/Science Facets/domain 2)/Product Collection/Context Area/Primary Result Summary/Science Facets/domain <ol style="list-style-type: none"> 1) "Atmosphere" 2) "Dynamics" 3) "Heliosheath" 4) "Heliosphere" 5) "Interior" 6) "Interstellar" 7) "Ionosphere" 8) "Magnetosphere" 9) "Rings" 10) "Surface" 	ASCII_Short_String_Collapsed
edition_name	The edition name attribute provides a name by which the edition is known.	1)/ Product Document/Document/Document Edition/edition_name	UTF8_Short_String_Collapsed
editor_list	The editor_list attribute contains a semi-colon-separated list of names of people to be cited as editors of the associated product. The general format for individual names is: SURNAME, GIVEN NAME(s). Initials may be used in lieu of given name(s). If the name contains a suffix ("Jr.", "Sr.", "III", etc.) it should be placed before the comma (.). Do not include the word "and" before the final editor. All editors should be listed explicitly - do not elide the list using "et al."	<ol style="list-style-type: none"> 1)/Product Bundle/Identification Area/Citation Information/editor_list 2)/Product Collection/Identification Area/Citation Information/editor_list 	UTF8_Text_Preserved
Element_Array	The Element Array class is used as a component of the array class and defines an element of the array.	1)/ Product Observational/File Area Observational/Array 2D[*]/Element Array	
		<ol style="list-style-type: none"> 1) data_type 2) unit 3) scaling_factor 4) value_offset 	
External_Reference	The External_Reference class is used to reference a source outside the PDS registry system.	1)/ Product Bundle/Reference List/External Reference[*]	
		<ol style="list-style-type: none"> 1) doi 2) reference_text 3) description 	
Field_Binary	The Field_Binary class defines a field of a binary record or a field of a binary group.	1)/ Product Observational/File Area Observational/Table Binary[*]/Record Binary/Field Binary	

		<ul style="list-style-type: none"> 1) name 2) field_number 3) field_location 4) data_type 5) field_length 6) field_format 7) unit 8) scaling_factor 9) value_offset 10) description 11) Special_Constants 12) Field_Statistics 13) Packed_Data_Fields 	
Field_Delimited	The Field_Delimited class defines a field of a delimited record or a field of a delimited group.	1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]	
		<ul style="list-style-type: none"> 1) name 2) field_number 3) data_type 4) maximum_field_length 5) field_format 6) unit 7) scaling_factor 8) value_offset 9) description 10) Special_Constants 11) Field_Statistics 	
field_delimiter	The field_delimiter attribute provides the character that marks the boundary between two fields in a delimited table.	1)/Product_Collection/File_Area_Inventory/Inventory/field_delimiter	
		<ul style="list-style-type: none"> 1) "Comma" 2) "Horizontal Tab" 3) "Semicolon" 4) "Vertical Bar" 5) "comma" 6) "horizontal tab" 7) "semicolon" 8) "vertical bar" 	ASCII_Short_String_Collapsed
field_length	The field_length attribute provides the number of bytes in the field.	1)/Product_Observational/File_Area_Observational/Table_Binary[*]/Record_Binary/Field_Binary/field_length	
			ASCII_NonNegative_Integer
			Units_of_Storage
field_location	The field_location attribute provides the starting byte for a field within a record or group, counting from '1'.	1)/Product_Observational/File_Area_Observational/Table_Binary[*]/Record_Binary/Field_Binary/field_location	
			ASCII_NonNegative_Integer
			Units_of_Storage
field_number	The field_number attribute provides the position of a field, within a series of fields, counting from 1. If two fields within a record are physically separated by one or more groups, they have consecutive field numbers; the fields within the intervening group(s) are numbered separately. Fields within a group separated by one or more (sub)groups, will also have consecutive field numbers.	1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/Field_Delimited[*]/field_number 2)/Product_Observational/File_Area_Observational/Table_Binary[*]/Record_Binary/Field_Binary[*]/field_number	
			ASCII_NonNegative_Integer
fields	The fields attribute provides a count of the total number of scalar fields directly associated with a table record. Fields within groups within the record are not included in this count.	1)/Product_Collection/File_Area_Inventory/Inventory/Record_Delimited/fields 2)/Product_Observational/File_Area_Observational/Table_Binary[*]/Record_Binary/fields	
			ASCII_NonNegative_Integer
File	The File class consists of attributes that describe a file in a data store.	1)/Product_Collection/File_Area_Inventory/File 2)/Product_Observational/File_Area_Observational/File	
		<ul style="list-style-type: none"> 1) file_name 2) local_identifier 3) creation_date_time 4) file_size 5) records 6) md5_checksum 7) comment 8) Digital_Object 	

File_Area_Inventory	The File Area Inventory class describes a file and an inventory consisting of references to members.	1)/ Product Collection/File Area Inventory 1) File_Area 2) File 3) Inventory	
File_Area_Observational	The File Area Observational class describes, for an observational product, a file and one or more tagged_data_objects contained within the file.	1)/ Product Observational/File Area Observational 1) File_Area 2) File 3) Composite_Structure 4) Array 5) Array_1D 6) Array_2D 7) Array_2D_Image 8) Array_2D_Map 9) Array_2D_Spectrum 10) Array_3D 11) Array_3D_Image 12) Array_3D_Movie 13) Array_3D_Spectrum 14) Encoded_Header 15) Header 16) Stream_Text 17) Table_Binary 18) Table_Character 19) Table_Delimited	
files	The files attribute provides the number of files in the edition.	1)/ Product Document/Document/Document_Edition/files	ASCII_NonNegative_Integer
geom:Geometry	The Geometry class is a container for all geometric information in the label. The Image_Display_Geometry class should have one instance if the primary data object is an Array object for which two of the dimensions are suitable for display in the vertical (line) and horizontal (sample) dimensions of a display device. Multiple instances of the Image_Display_Geometry class are only appropriate if the data product contains multiple Array objects and the orientations of the various objects are not the same.	1)/ Product Observational/Observation Area/Discipline Area/Geometry 1) geom:SPICE_Kernel_Files 2) geom:Expanded_Geometry 3) geom:Image_Display_Geometry 4) geom:Geometry_Orbiter 5) geom:Geometry_Lander	
geom:Geometry_Lander	The Geometry_Lander class is a container for all geometric information in the label relating to a landed spacecraft, including rovers.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry_Lander 1) geom:geometry_state 2) description 3) local_Identifier 4) geom:Articulation_Device_Parameters 5) geom:Camera_Model_Parameters 6) geom:Coordinate_Space_Definition 7) geom:Derived_Geometry 8) geom:Motion_Counter	
geom:geometry_state	Specifies the state or configuration of this instance of Geometry_Lander applies. Use of this attribute enables multiple instances of Geometry_Lander, describing the geometry under different conditions. Note that it is legal for more than one instance to have the same geometry_state, in which case the local_identifier should be used to differentiate the instances, along with description. If not present, the semantics of "Telemetry" should be assumed. It is not required that instances be retained; a derived product may have an Adjusted instance but remove the Telemetry one, for example.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry_Lander/geometry_state	ASCII_Short_String_Collapsed
groups	The groups attribute provides a count of the total number of groups directly associated with a table record. Groups within groups within the record are not included in this count.	1)/ Product Collection/File Area Inventory/Inventory/Record_Delimited/groups 2)/ Product Observational/File Area Observational/Table_Binary[*]/Record_Binary/groups	ASCII_NonNegative_Integer
Header	The Header class describes a data object header.	1)/ Product Observational/File Area Observational/Header[*]	

		<ol style="list-style-type: none"> 1) Parsable_Byte_Stream 2) name 3) object_length 4) offset 5) local_identifier 6) parsing_standard_id 7) md5_checksum 8) description 9) Digital_Object 	
disp:horizontal_display_axis	The horizontal_display_axis attribute identifies, by name, the axis of an Array (or Array subclass) that is intended to be displayed in the horizontal or "sample" dimension on a display device. The value of this attribute must match the value of one, and only one, axis_name attribute in an Axis_Array class of the associated Array.	<ol style="list-style-type: none"> 1) /Product Observational/Observation Area/Discipline Area/Display Settings*/Display_Direction/horizontal_display_axis 	ASCII_Short_String_Collapsed
disp:horizontal_display_direction	The horizontal_display_direction attribute specifies the direction across the screen of a display device that data along the horizontal axis of an Array is supposed to be displayed.	<ol style="list-style-type: none"> 1) /Product Observational/Observation Area/Discipline Area/Display Settings*/Display_Direction/horizontal_display_direction <ol style="list-style-type: none"> 1) "Left to Right" 2) "Right to Left" 	ASCII_Short_String_Collapsed
Identification_Area	The identification area consists of attributes that identify and name an object.	<ol style="list-style-type: none"> 1) /Product Document/Identification Area 2) /Product Bundle/Identification Area 3) /Product Collection/Identification Area 4) /Product Observational/Identification Area <ol style="list-style-type: none"> 1) logical_identifier 2) version_id 3) title 4) information_model_version 5) product_class 6) Alias_List 7) Citation_Information 8) Modification_History 	
img:Imaging	The Imaging class contains classes and attributes describing both the image product itself and the imaging instrument. Image product information can include exposure duration, filters, data correction, sampling, frame, sub-frames, and how the product was derived. For the imaging instrument, information can be provided describing the dynamic physical or operating characteristics of the imaging instrument.	<ol style="list-style-type: none"> 1) /Product Observational/Observation Area/Discipline Area/Imaging <ol style="list-style-type: none"> 1) Local_Internal_Reference 2) img:Brightness_Correction 3) img:Col_Sum 4) img:Color_Filter_Array 5) img:Color_Processing 6) img:Dark_Current_Correction 7) img:Detector 8) img:Downsampling 9) img:Exposure 10) img:Flat_Field_Correction 11) img:Focus 12) img:Focus_Stack 13) img:Frame 14) img:High_Dynamic_Range 15) img:Histogram 16) img:Illumination 17) img:Image_Filter 18) img:Image_Mask 19) img:Onboard_Compression 20) img:Optical_Filter 21) img:Optical_Properties 22) img:Pointing_Correction 23) img:Radiometric_Correction 24) img:Reference_Pixel 25) img:Row_Sum 26) img:Sampling 27) img:Shutter_Subtraction 28) img:Spatial_Filter 29) img:Subframe 30) img:Tiling 31) img:Thumbnail 32) img:Video 33) img:Instrument_State 34) img:Commanded_Parameters 	

information_model_version	<p>The information_model_version attribute provides the version identification of the PDS Information Model on which the label and schema are based.</p>	<p>1)/Product Document/Identification Area/information_model_version</p> <p>2)/Product Bundle/Identification Area/information_model_version</p> <p>3)/Product Collection/Identification Area/information_model_version</p> <p>4)/Product Observational/Identification Area/information_model_version</p>	
		<p>1) "1.0.0.0"</p> <p>2) "1.1.0.0"</p> <p>3) "1.10.0.0"</p> <p>4) "1.10.1.0"</p> <p>5) "1.11.0.0"</p> <p>6) "1.12.0.0"</p> <p>7) "1.13.0.0"</p> <p>8) "1.14.0.0"</p> <p>9) "1.15.0.0"</p> <p>10) "1.16.0.0"</p> <p>11) "1.2.0.0"</p> <p>12) "1.2.0.1"</p> <p>13) "1.3.0.0"</p> <p>14) "1.3.0.1"</p> <p>15) "1.4.0.0"</p> <p>16) "1.5.0.0"</p> <p>17) "1.6.0.0"</p> <p>18) "1.7.0.0"</p> <p>19) "1.8.0.0"</p> <p>20) "1.9.0.0"</p> <p>21) "1.9.1.0"</p>	<p>ASCII_Short_String_Collapsed</p>
img:Instrument_State	<p>The Instrument_State class contains classes providing the values of any dynamic physical or operating characteristics of the imaging instruments.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Imaging/Instrument_State</p> <p>1) img:Device_Component_States</p> <p>2) img:Device_Currents</p> <p>3) img:Device_Motor_Counts</p> <p>4) img:Device_Temperatures</p> <p>5) img:Device_Voltages</p>	
Inventory	<p>The Inventory class defines the inventory for members of a collection.</p>	<p>1)/Product Collection/File Area Inventory/Inventory</p> <p>1) Table_Delimited</p> <p>2) name</p> <p>3) reference_type</p> <p>4) offset</p> <p>5) records</p> <p>6) local_identifier</p> <p>7) object_length</p> <p>8) record_delimiter</p> <p>9) md5_checksum</p> <p>10) parsing_standard_id</p> <p>11) description</p> <p>12) field_delimiter</p> <p>13) Digital_Object</p> <p>14) Uniformly_Sampled</p> <p>15) Record_Delimited</p>	
Investigation_Area	<p>The Investigation_Area class provides information about an investigation (mission, observing campaign or other coordinated, large-scale data collection effort).</p>	<p>1)/Product Document/Context Area/Investigation_Area</p> <p>2)/Product Bundle/Context Area/Investigation_Area</p> <p>3)/Product Collection/Context Area/Investigation_Area</p> <p>4)/Product Observational/Observation Area/Investigation_Area</p> <p>1) name</p> <p>2) type</p> <p>3) Internal_Reference</p>	
keyword	<p>The keyword attribute provides one or more words to be used for keyword search.</p>	<p>1)/Product Collection/Identification Area/Citation Information/keyword[*]</p>	<p>UTF8_Short_String_Collapsed</p>
language	<p>The language attribute provides the language used for definition and designation of the term.</p>	<p>1)/Product Document/Document/Document_Edition/language</p> <p>1) "English"</p>	<p>ASCII_Short_String_Collapsed</p>

local_identifier	<p>The local_identifier attribute provides a character string which uniquely identifies the containing object within the label.</p>	<p>1)/Product Collection/File Area Inventory/File/local_identifier</p> <p>2)/Product Observational/File Area Observational/Array 2D[*]/local_identifier</p> <p>3)/Product Collection/File Area Inventory/Inventory/local_identifier</p> <p>4)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/local_identifier</p> <p>5)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/local_identifier</p> <p>6)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/local_identifier</p> <p>7)/Product Observational/File Area Observational/File/local_identifier</p> <p>8)/Product Observational/File Area Observational/Stream Text/local_identifier</p> <p>9)/Product Observational/File Area Observational/Header[*]/local_identifier</p> <p>10)/Product Observational/File Area Observational/Table Binary[*]/local_identifier</p>
Local_Internal_Reference	<p>The Local_Internal_Reference class is used to cross-reference other Description Objects in a PDS4 label.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Display Settings[*]/Local_Internal_Reference</p> <p>2)/Product Observational/Observation Area/Discipline Area/Imaging/Local_Internal_Reference</p> <p>3)/Product Observational/Observation Area/Discipline Area/Processing Information/Local_Internal_Reference</p>
local_reference_type	<p>The local_reference_type attribute provides the name of an association between an entity identified by a local_identifier_reference and another corresponding entity identified by a local_identifier. The values for the local_reference_type are expected to be enumerated for appropriate contexts in the Schematron files of local (i.e., discipline and mission) data dictionaries.</p>	<p>1)/Product Observational/Observation Area/Discipline Area/Display Settings[*]/Local_Internal_Reference/local_reference_type</p> <p>2)/Product Observational/Observation Area/Discipline Area/Imaging/Local_Internal_Reference/local_reference_type</p> <p>3)/Product Observational/Observation Area/Discipline Area/Processing Information/Local_Internal_Reference/local_reference_type</p>
mars2020:Mars2020_Parameters	<p>The Mars2020_Parameters class is a superclass containing all Mars2020 mission classes.</p>	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020_Parameters</p>
maximum_field_length	<p>The maximum_field_length attribute sets an upper, inclusive bound on the number of bytes in the field.</p>	<p>1)/Product Collection/File Area Inventory/Inventory/Record Delimited/Field Delimited[*]/maximum field length</p>
maximum_record_length	<p>The maximum_record_length attribute provides the maximum length of a record, including the record delimiter.</p>	<p>1)/Product Collection/File Area Inventory/Inventory/Record Delimited/maximum record length</p>
member_status	<p>The member_status attribute indicates whether the collection is primary and whether the file_specification_name has been provided for the product_collection label.</p>	<p>1)/Product Bundle/Bundle Member Entry[*]/member_status</p>
Mission_Area	<p>The mission area allows the insertion of mission specific metadata.</p>	<p>1)/Product Observational/Observation Area/Mission Area</p>

mars2020:mission_phase_name	The mission_phase_name identifies a time period within the mission.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/Observation Information/mission_phase_name 1) "ATLO" 2) "Cruise" 3) "Development" 4) "Surface Mission" 5) "Test"	ASCII_Short_String_Preserved
modification_date	The modification_date attribute provides date the modifications were completed	1)/ Product Bundle/Identification Area/Modification History/Modification Detail/modification_date 2)/ Product Collection/Identification Area/Modification History/Modification Detail/modification_date 3)/ Product Observational/Identification Area/Modification History/Modification Detail/modification_date	ASCII_Date_YMD
Modification_Detail	The Modification_Detail class provides the details of one round of modification for the product. The first, required, instance of this class documents the date the product was first registered.	1)/ Product Bundle/Identification Area/Modification History/Modification Detail 2)/ Product Collection/Identification Area/Modification History/Modification Detail 3)/ Product Observational/Identification Area/Modification History/Modification Detail 1) modification_date 2) version_id 3) description	
Modification_History	The Modification_History class tracks the history of changes made to the product once it enters the registry system.	1)/ Product Bundle/Identification Area/Modification History 2)/ Product Collection/Identification Area/Modification History 3)/ Product Observational/Identification Area/Modification History 1) Modification_Detail	
geom:Motion_Counter	The Motion_Counter class provides a set of integers that describe a (potentially) unique location (position / orientation) for a rover or other movable object. Each time an event occurs that results in a movement, a new motion counter value is created. This includes intentional motion due to drive commands, as well as potential motion due to other articulating devices, such as arms or antennae. This motion counter (or part of it) is used as a reference to define instances of coordinate systems that can move such as SITE or ROVER frames. The motion counter is defined in a mission-specific manner. Although the original intent was to have incrementing indices (e.g., MER), the motion counter could also contain any integer values that conform to the above definition, such as time or spacecraft clock values.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Motion Counter 1) name 2) local_identifier 3) geom:Motion_Counter_Index	
geom:Motion_Counter_Index	The Motion_Counter_Index class identifies and populates one element of a Motion_Counter list. The class should be repeated for each element of the list.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Motion Counter/Motion_Counter_Index[*] 1 1) geom:List_Index_No_Units 2) geom:index_sequence_number 3) geom:index_name 4) geom:index_id 5) geom:index_value_number	

<p>name</p>	<p>The name attribute provides a word or combination of words by which the object is known.</p>	<ol style="list-style-type: none"> 1)/Product Document/Context Area/Investigation Area/name 2)/Product Document/Context Area/Observing System/name 3)/Product Document/Context Area/Observing System/Observing System Component/name 4)/Product Bundle/Context Area/Investigation Area/name 5)/Product Bundle/Context Area/Observing System/Observing System Component[*]/name 6)/Product Bundle/Context Area/Target Identification/name 7)/Product Observational/File Area Observational/Array 2D[*]/name 8)/Product Collection/Context Area/Investigation Area/name 9)/Product Collection/Context Area/Observing System/Observing System Component[*]/name 10)/Product Collection/Context Area/Target Identification/name 11)/Product Collection/File Area Inventory/Inventory/Record Delimited/Field Delimited[*]/name 12)/Product Observational/Observation Area/Investigation Area/name 13)/Product Observational/Observation Area/Observing System/Observing System Component/name 14)/Product Observational/Observation Area/Target Identification/name 15)/Product Observational/File Area Observational/Stream Text/name 16)/Product Observational/File Area Observational/Header[*]/name 17)/Product Observational/File Area Observational/Table Binary[*]/name 18)/Product Observational/File Area Observational/Table Binary[*]/Record Binary/Field Binary/name 		
<p>Observation_Area</p>	<p>The observation area consists of attributes that provide information about the circumstances under which the data were collected.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td data-bbox="1021 887 1585 1099"> <ol style="list-style-type: none"> 1)/Product Observational/Observation Area 1) Context Area 2) comment 3) Time Coordinates 4) Investigation Area 5) Primary Result Summary 6) Observing System 7) Target Identification 8) Mission Area 9) Discipline Area </td> <td data-bbox="1585 887 2141 1099"> <p>UTF8_Short_String_Collapsed</p> </td> </tr> </table>	<ol style="list-style-type: none"> 1)/Product Observational/Observation Area 1) Context Area 2) comment 3) Time Coordinates 4) Investigation Area 5) Primary Result Summary 6) Observing System 7) Target Identification 8) Mission Area 9) Discipline Area 	<p>UTF8_Short_String_Collapsed</p>
<ol style="list-style-type: none"> 1)/Product Observational/Observation Area 1) Context Area 2) comment 3) Time Coordinates 4) Investigation Area 5) Primary Result Summary 6) Observing System 7) Target Identification 8) Mission Area 9) Discipline Area 	<p>UTF8_Short_String_Collapsed</p>			
<p>mars2020:Observation_Information</p>	<p>The Observation_Information class provides information about a science observation.</p>	<ol style="list-style-type: none"> 1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/Observation Information 1) mars2020:release_number 2) mars2020:mission_phase_name 3) mars2020:product_type_name 4) mars2020:spacecraft_clock_start 5) mars2020:spacecraft_clock_stop 6) mars2020:spacecraft_clock_partition 7) mars2020:sol_number 8) mars2020:start_sol_number 9) mars2020:stop_sol_number 10) mars2020:start_local_mean_solar_time 11) mars2020:stop_local_mean_solar_time 12) mars2020:start_local_true_solar_time 13) mars2020:start_local_true_solar_time_sol 14) mars2020:stop_local_true_solar_time 15) mars2020:stop_local_true_solar_time_sol 16) mars2020:start_solar_longitude 17) mars2020:stop_solar_longitude 18) mars2020:active_flight_computer 19) mars2020:start_mars_year 20) mars2020:stop_mars_year 		

msn_surface:Observational_Intent	Describes the intent and context of the observation.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information/Observational Intent	<ul style="list-style-type: none"> 1) msn_surface:campaign 2) msn_surface:goal 3) msn_surface:task 4) msn_surface:activity_notes 5) msn_surface:keyword 6) msn_surface:activity_id 7) msn_surface:target_id
Observing_System	The Observing System class describes the entire suite used to collect the data.	<ul style="list-style-type: none"> 1)/Product Document/Context Area/Observing System 2)/Product Bundle/Context Area/Observing System 3)/Product Collection/Context Area/Observing System 4)/Product Observational/Observation Area/Observing System 	<ul style="list-style-type: none"> 1) name 2) description 3) Observing_System_Component 4) Conceptual_Object 5) Physical_Object
parsing_standard_id	The parsing_standard_id attribute provides the formal name of a standard used for the structure of a Parsable Byte Stream digital object.	<ul style="list-style-type: none"> 1)/Product Collection/File Area Inventory/Inventory/parsing_standard_id 2)/Product Observational/File Area Observational/Stream Text/parsing_standard_id 3)/Product Observational/File Area Observational/Header*/parsing_standard_id 	<ul style="list-style-type: none"> 1) "7-Bit ASCII Text" 2) "CDF 3.4 ISTEP/IACG" 3) "FITS 3.0" 4) "FITS 4.0" 5) "ISIS2" 6) "ISIS2 History Label" 7) "ISIS3" 8) "PDS DSV 1" 9) "PDS ODL 2" 10) "PDS3" 11) "Pre-PDS3" 12) "TIFF 6.0" 13) "UTF-8 Text" 14) "VICAR1" 15) "VICAR2" <p style="text-align: right;">ASCII_Short_String_Collapsed</p>
Primary_Result_Summary	The Primary_Result_Summary class provides a high-level description of the types of products included in the collection or bundle	<ul style="list-style-type: none"> 1)/Product Bundle/Context Area/Primary Result Summary 2)/Product Collection/Context Area/Primary Result Summary 	<ul style="list-style-type: none"> 1) type 2) purpose 3) data_regime 4) processing_level 5) processing_level_id 6) description 7) Science_Facets
proc:Process	The Process class describes one of the software processes used to produce the data product referenced in the parent Processing_Information class. This class includes descriptions of the process owner as well as the data processing software used to create the data product.	1)/ Product Observational/Observation Area/Discipline Area/Processing Information/Process	<ul style="list-style-type: none"> 1) name 2) description 3) proc:process_owner_name 4) proc:process_owner_institution_name 5) proc:Software
proc:Processing_Information	The Processing_Information class contains detailed information regarding the history of processing of the data product(s) described in the label. Information that can be specified using this class includes input products used to create a specific data product and the software and processes used to produce that product.	1)/ Product Observational/Observation Area/Discipline Area/Processing Information	<ul style="list-style-type: none"> 1) Local_Internal_Reference 2) proc:Input_Product_List 3) proc:Process

<p>processing_level</p>	<p>The processing_level attribute provides a broad classification of data processing level.</p>	<p>1)/Product Collection/Context Area/Primary Result Summary/processing_level[*] 2)/Product Bundle/Context Area/Primary Result Summary/processing_level[*] 3)/Product Collection/Context Area/Primary Result Summary/processing_level</p>	<p>1) "Calibrated" 2) "Derived" 3) "Partially Processed" 4) "Raw" 5) "Telemetry"</p> <p>ASCII_Short_String_Collapsed</p>
<p>Product_Bundle</p>	<p>A Product_Bundle is an aggregate product and has a table of references to one or more collections.</p>	<p>1)/Product Bundle</p>	<p>1) Product 2) Context Area 3) Identification Area 4) Reference List 5) Bundle 6) File Area Text 7) Bundle Member Entry</p>
<p>product_class</p>	<p>The product_class attribute provides the name of the product class.</p>	<p>1)/Product Document/Identification Area/product class 2)/Product Bundle/Identification Area/product class 3)/Product Collection/Identification Area/product class 4)/Product Observational/Identification Area/product class</p>	<p>1) "Product_AIP" 2) "Product_Ancillary" 3) "Product_Attribute_Definition" 4) "Product_Browse" 5) "Product_Bundle" 6) "Product_Class_Definition" 7) "Product_Collection" 8) "Product_Context" 9) "Product_DIP" 10) "Product_DIP_Deep_Archive" 11) "Product_Data_Set_PDS3" 12) "Product_Document" 13) "Product_File_Repository" 14) "Product_File_Text" 15) "Product_Instrument_Host_PDS3" 16) "Product_Instrument_PDS3" 17) "Product_Metadata_Supplemental" 18) "Product_Mission_PDS3" 19) "Product_Native" 20) "Product_Observational" 21) "Product_Proxy_PDS3" 22) "Product_SIP" 23) "Product_SIP_Deep_Archive" 24) "Product_SPICE_Kernel" 25) "Product_Service" 26) "Product_Software" 27) "Product_Subscription_PDS3" 28) "Product_Target_PDS3" 29) "Product_Thumbnail" 30) "Product_Update" 31) "Product_Volume_PDS3" 32) "Product_Volume_Set_PDS3" 33) "Product_XML_Schema" 34) "Product_Zipped"</p> <p>ASCII_Short_String_Collapsed</p>
<p>Product_Collection</p>	<p>A Product_Collection has a table of references to one or more basic products. The references are stored in a table called the inventory.</p>	<p>1)/Product Collection</p>	<p>1) Product 2) Context Area 3) Identification Area 4) Reference List 5) Collection 6) File Area Inventory</p>
<p>Product_Document</p>	<p>A Product Document is a product consisting of a single logical document that may comprise one or more document editions.</p>	<p>1)/Product Document</p>	

		<ul style="list-style-type: none"> 1) Product 2) Context Area 3) Identification Area 4) Reference List 5) Document 	
Product_Observational	A Product_Observational is a set of one or more information objects produced by an observing system.	<ul style="list-style-type: none"> 1) Product Observational 	
		<ul style="list-style-type: none"> 1) Product 2) Identification Area 3) Observation Area 4) Reference List 5) File Area Observational 6) File Area Observational Supplemental 	
proc:program_version	The program_version attribute specifies the version of the software program.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Processing Information/Process/Software/Software Program/program_version 	ASCII_Short_String_Collapsed
publication_date	The publication_date attribute provides the date on which an item was published.	<ul style="list-style-type: none"> 1) Product Document/Document/publication_date 	ASCII_Date_YMD
publication_year	The publication_year attribute provides the year in which the product should be considered as published. Generally, this will be the year the data were declared "Certified" or "Archived".	<ul style="list-style-type: none"> 1) Product Document/Identification Area/Citation Information/publication_year 2) Product Bundle/Identification Area/Citation Information/publication_year 3) Product Collection/Identification Area/Citation Information/publication_year 	ASCII_Date_YMD
purpose	The purpose attribute provides an indication of the primary purpose of the observations included.	<ul style="list-style-type: none"> 1) Product Bundle/Context Area/Primary Result Summary/purpose 2) Product Collection/Context Area/Primary Result Summary/purpose 	ASCII_Short_String_Collapsed
		<ul style="list-style-type: none"> 1) "Calibration" 2) "Checkout" 3) "Engineering" 4) "Navigation" 5) "Observation Geometry" 6) "Science" 7) "Supporting Observation" 	
geom:qcos	qcos is the scalar component of a quaternion. qcos = cos(theta/2), where theta is the angle of rotation.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Quaternion Plus Direction/qcos 2) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Quaternion Plus Direction/qcos 	ASCII_Real
geom:qsin1	qsin1 is the first element of the vector component of a quaternion. qsin1 = x*sin(theta/2) where theta is the angle of rotation and (x,y,z) is the unit vector around which the rotation occurs.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Quaternion Plus Direction/qsin1 2) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Quaternion Plus Direction/qsin1 	ASCII_Real
geom:qsin2	qsin2 is the second element of the vector component of a quaternion. qsin2 = y*sin(theta/2) where theta is the angle of rotation and (x,y,z) is the unit vector around which the rotation occurs.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Quaternion Plus Direction/qsin2 2) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Quaternion Plus Direction/qsin2 	ASCII_Real
geom:qsin3	qsin3 is the third element of the vector component of a quaternion. qsin3 = z*sin(theta/2) where theta is the angle of rotation and (x,y,z) is the unit vector around which the rotation occurs.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Quaternion Plus Direction/qsin3 2) Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Quaternion Plus Direction/qsin3 	ASCII_Real

geom:quaternion_measurement_method	Specifies the method by which the coordinate space was measured. This provides an indication of the quality of the definition.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[1]/Coordinate Space Quality/quaternion_measurement_method</p> <p>1) "Bundle_Adjustment" 2) "Coarse" 3) "Fine" 4) "Sun_Find" 5) "Tilt_Only" 6) "Unknown"</p> <p>ASCII_Short_String_Collapsed</p>
Record_Binary	The Record_Binary class is a component of the table class and defines a record of the table.	<p>1)/Product Observational/File Area Observational/Table Binary[*]/Record_Binary</p> <p>1) fields 2) record_length 3) groups 4) Field_Binary 5) Group_Field_Binary</p>
Record_Delimited	The Record_Delimited class is a component of the delimited table (spreadsheet) class and defines a record of the delimited table.	<p>1)/Product Collection/File Area Inventory/Inventory/Record_Delimited</p> <p>1) fields 2) maximum_record_length 3) groups 4) Field_Delimited 5) Group_Field_Delimited</p>
record_delimiter	The record_delimiter attribute provides the character or characters used to indicate the end of a record.	<p>1)/Product Collection/File Area Inventory/Inventory/record_delimiter</p> <p>2)/Product Observational/File Area Observational/Stream Text/record_delimiter</p> <p>1) "Carriage-Return Line-Feed" 2) "Line-Feed" 3) "carriage-return line-feed"</p> <p>ASCII_Short_String_Collapsed</p>
record_length	The record_length attribute provides the length of a record, including a record delimiter, if present.	<p>1)/Product Observational/File Area Observational/Table Binary[*]/Record_Binary/record_length</p> <p>ASCII_NonNegative_Integer</p> <p>Units_of_Storage</p>
records	The records attribute provides a count of records.	<p>1)/Product Collection/File Area Inventory/Inventory/records</p> <p>2)/Product Observational/File Area Observational/Table Binary[*]/records</p> <p>ASCII_NonNegative_Integer</p>
Reference_List	The Reference_List class provides general references, cross-references, and source products for the product. References cited elsewhere in the label need not be repeated here.	<p>1)/Product Collection/Reference_List</p> <p>2)/Product Bundle/Reference_List</p> <p>3)/Product Observational/Reference_List</p> <p>1) Internal_Reference 2) External_Reference 3) Source_Product_Internal 4) Source_Product_External</p>
reference_text	The reference_text attribute provides a complete bibliographic citation for a published work.	<p>1)/Product Bundle/Reference_List/External_Reference[*]/reference_text</p> <p>UTF8_Text_Collapsed</p>

reference_type	The reference_type attribute provides the name of the association.	<p>1)/Product Collection/Reference List/Internal Reference[*]/reference_type</p> <p>2)/Product Document/Context Area/Investigation Area/Internal Reference/reference_type</p> <p>3)/Product Document/Context Area/Observing System/Observing System Component/Internal Reference/reference_type</p> <p>4)/Product Bundle/Context Area/Investigation Area/Internal Reference/reference_type</p> <p>5)/Product Bundle/Context Area/Observing System/Observing System Component[*]/Internal Reference/reference_type</p> <p>6)/Product Bundle/Context Area/Target Identification/Internal Reference/reference_type</p> <p>7)/Product Bundle/Reference List/Internal Reference[*]/reference_type</p> <p>8)/Product Bundle/Bundle Member Entry[*]/reference_type</p> <p>9)/Product Collection/Context Area/Investigation Area/Internal Reference/reference_type</p> <p>10)/Product Collection/Context Area/Observing System/Observing System Component[*]/Internal Reference/reference_type</p> <p>11)/Product Collection/Context Area/Target Identification/Internal Reference/reference_type</p> <p>12)/Product Collection/File Area Inventory/Inventory/reference_type</p> <p>13)/Product Observational/Observation Area/Investigation Area/Internal Reference/reference_type</p> <p>14)/Product Observational/Observation Area/Observing System/Observing System Component/Internal Reference/reference_type</p> <p>15)/Product Observational/Observation Area/Target Identification/Internal Reference/reference_type</p> <p>16)/Product Observational/Reference List/Internal Reference[*]/reference_type</p> <p>17)/Product Observational/Reference List/Source Product Internal/reference_type</p>
mars2020:release_number	release_number is the identifier of a scheduled release of Mars 2020 data from PDS. The first Mars 2020 data release has release_number "01". The release_number for a given product is always the first release in which it appears, and does not change if the product is revised later.	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/Observation Information/release_number</p>
geom:rotation_direction	The rotation_direction attribute identifies the direction of the rotation for a specific quaternion. This is used when the two frames involved are unambiguously identified in the enclosing classes.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Quaternion Plus Direction/rotation_direction</p> <p>2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Quaternion Plus Direction/rotation_direction</p>
mars2020:scam_type	Bit mask indicating technique type	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header/scam_type</p>
		ASCII_Short_String_Collapsed
		<p>1) "Forward"</p> <p>2) "From Base"</p> <p>3) "Present to Reference"</p> <p>4) "Reference to Present"</p> <p>5) "Reverse"</p> <p>6) "Toward Base"</p>
		ASCII_Integer

Science_Facets	The Science_Facets class contains the science-related search facets. It is optional and may be repeated if an product has facets related to, for example, two different disciplines (as defined by the discipline_name facet). Note that Science_Facets was modeled with Discipline_Facets as a component and Discipline_Facets was modeled with Group_Facet1 and Group_Facet2 as components. This dependency hierarchy was flattened and only Science_Facets exists in the schema.	<p>1)/Product Bundle/Context Area/Primary Result Summary/Science Facets</p> <p>2)/Product Collection/Context Area/Primary Result Summary/Science Facets</p> <p>1) wavelength_range 2) domain 3) Discipline_Facets 4) discipline_name</p>
sequence_number	The sequence_number attribute provides a number that is used to order axes in an array.	<p>1)/Product Observational/File Area Observational/Array 2D[*]/Axis Array[*]/sequence_number</p> <p>ASCII_NonNegative_Integer</p>
proc:Software	The Software class describes the data processing software used in order to produce the data product.	<p>1)/Product Observational/Observation Area/Discipline Area/Processing Information/Process/Software</p> <p>1) name 2) software_id 3) software_version_id 4) software_type 5) description 6) Internal_Reference 7) proc:Software_Program</p>
proc:Software_Program	The Software_Program class describes the specific components or tasks of the Software executed in producing the data product.	<p>1)/Product Observational/Observation Area/Discipline Area/Processing Information/Process/Software/Software_Program</p> <p>1) name 2) proc:program_type_name 3) proc:program_user 4) proc:program_hostname 5) proc:program_path 6) proc:program_version 7) proc:program_start_date_time 8) proc:program_stop_date_time 9) description 10) proc:Software_Program_Parameters</p>
mars2020:sol_number	Sol_number is the number of the Mars day on which an observation was acquired. Landing day is Sol 0.	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020_Parameters/Observation Information/sol_number</p> <p>ASCII_Integer</p>
Source_Product_Internal	The Source_Product_Internal class is used to reference one or more source products in the PDS4 registry system. A source product contains input data for the creation of this product.	<p>1)/Product Observational/Reference List/Source Product Internal</p> <p>1) lidvid_reference 2) reference_type 3) comment</p>
mars2020:spacecraft_clock_partition	The spacecraft_clock_partition provides the clock partition active for the spacecraft_clock_start and spacecraft_clock_stop attributes. This attribute may be used when the spacecraft_clock values do not include a partition number.	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020_Parameters/Observation Information/spacecraft_clock_partition</p> <p>ASCII_Integer</p>
mars2020:spacecraft_clock_start	The spacecraft_clock_start is the value of the spacecraft clock at the beginning of an observation, in seconds. Values are formed according to the pattern [p/]ddddddddd[.ffffff], where p is an optional partition number, dddddddd is a whole number of seconds up to 10 digits, and .ffffff is an optional fraction of a second up to 9 digits. The whole number and fraction are separated by a period. If a partition number and slash are not present, then the attribute spacecraft_clock_partition must be used.	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020_Parameters/Observation Information/spacecraft_clock_start</p> <p>ASCII_Short_String_Collapsed</p>
geom:SPICE_Kernel_Files	The SPICE_Kernel_Files class provides references to the SPICE files used when calculating geometric values.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/SPICE Kernel Files</p> <p>1) comment 2) geom:SPICE_Kernel_Identification</p>
geom:SPICE_Kernel_Identification	The SPICE_Kernel_Identification class optionally includes the SPICE kernel type and provides two alternatives for identifying the product: LIDVID using Internal_Reference, and the file name of the kernel file. Although optional, LIDVID should be given if one is available. The optional kernel_provenance attribute indicates whether the kernel is a predict or reconstructed kernel, or some combination of the two, or if it is a kernel type for which such distinctions do not apply.	<p>1)/Product Observational/Observation Area/Discipline Area/Geometry/SPICE Kernel Files/SPICE Kernel Identification</p> <p>1) kernel_type 2) geom:spice_kernel_file_name 3) geom:kernel_provenance 4) Internal_Reference</p>
mars2020:start_local_mean_solar_time	Start_local_mean_solar_time is the local mean solar time, as defined in the main PDS4 data dictionary, at the beginning of an observation.	<p>1)/Product Observational/Observation Area/Mission Area/Mars2020_Parameters/Observation Information/start_local_mean_solar_time</p>

			ASCII_Short_String_Collapsed
mars2020:start_local_true_solar_time	Start_local_true_solar_time is the local true solar time, as defined in the main PDS4 data dictionary, at the beginning of an observation.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/Observation Information/start_local_true_solar_time	ASCII_Short_String_Collapsed
mars2020:start_solar_longitude	Start_solar_longitude is the solar longitude, as defined in the main PDS4 data dictionary, at the beginning of an observation.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/Observation Information/start_solar_longitude	ASCII_Real Units_of_Angle
Stream_Text	The Stream text class defines a text object.	1)/ Product Observational/File Area Observational/Stream Text	
		1) Parsable_Byte_Stream 2) name 3) offset 4) record_delimiter 5) local_identifier 6) object_length 7) md5_checksum 8) description 9) parsing_standard_id 10) Digital_Object	
mars2020:SuperCam_Ancillary_Header	The SuperCam_Ancillary_Header class provides ancillary metadata specific to SuperCam observations.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Ancillary Header	
		1) mars2020:scam_point_number 2) mars2020:scam_type 3) mars2020:scam_two_d_flag 4) mars2020:scam_ldark 5) mars2020:scam_rdark 6) mars2020:scam_rdstats_flag 7) mars2020:scam_rastats_flag 8) mars2020:scam_ldstats_flag 9) mars2020:scam_lastats_flag	
mars2020:SuperCam_Generic_Packet_Header	The SuperCam_Generic_Packet_Header class provides metadata from the SuperCam product generic packet header.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters/SuperCam Generic Packet Header	
		1) mars2020:rce_time_sync 2) mars2020:data_definition_version 3) mars2020:nv_xmit_buffer_count 4) mars2020:bu_software_version 5) mars2020:cnfh_firmware_version 6) mars2020:bu_hardware_identifier 7) mars2020:se_firmware_version 8) mars2020:se_hardware_identifier 9) mars2020:mu_version_identifier 10) mars2020:mu_hardware_identifier 11) mars2020:xmit_data_id 12) mars2020:reserved_1 13) mars2020:number_of_sections 14) mars2020:generic_data_buffer_size	
mars2020:SuperCam_Parameters	The SuperCam_Parameters class provides metadata specific to SuperCam observations.	1)/ Product Observational/Observation Area/Mission Area/Mars2020 Parameters/SuperCam Parameters	
		1) mars2020:SuperCam_RMI_Mini_Header 2) mars2020:SuperCam_Ancillary_Header 3) mars2020:SuperCam_Generic_Packet_Header	
msn_surface:Surface_Mission_Information	The Surface_Mission_Information class contains attributes specific to surface missions which apply across instrument types.	1)/ Product Observational/Observation Area/Discipline Area/Surface Mission Information	
		1) msn_surface:surface_gravity 2) msn_surface:Command_Execution 3) msn_surface:Telemetry 4) msn_surface:Observational_Intent 5) msn_surface:Commanded_Parameters	
Table_Binary	The Table Binary class is an extension of table base and defines a simple binary table.	1)/ Product Observational/File Area Observational/Table Binary[*]	

		<ul style="list-style-type: none"> 1) name 2) offset 3) record_delimiter 4) local_identifier 5) records 6) md5_checksum 7) description 8) Uniformly_Sampled 9) Record_Binary 10) Digital_Object 	
geom:target_heliocentric_distance	The target_heliocentric_distance attribute provides the scalar distance between the center of the target and the center of the Sun.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Geometry/Geometry_Lander/Derived Geometry[*]/target_heliocentric_distance 2) Product Observational/Observation Area/Discipline Area/Geometry/Geometry_Lander/Derived Geometry/target_heliocentric_distance 	<p>ASCII_Real</p> <p>Units_of_Length</p>
Target_Identification	The Target_Identification class provides detailed target identification information.	<ul style="list-style-type: none"> 1) Product Bundle/Context Area/Target Identification 2) Product Collection/Context Area/Target Identification 3) Product Observational/Observation Area/Target Identification 	
		<ul style="list-style-type: none"> 1) name 2) alternate_designation 3) type 4) description 5) Internal_Reference 	
geom:target_name	Specifies the name of the target location for items in this class.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Geometry/Geometry_Lander/Derived Geometry[*]/target_name 2) Product Observational/Observation Area/Discipline Area/Geometry/Geometry_Lander/Derived Geometry/target_name 	<p>ASCII_Short_String_Collapsed</p>
msn_surface:Telemetry	The Telemetry class contains downlink-related attributes used primarily during mission operations.	<ul style="list-style-type: none"> 1) Product Observational/Observation Area/Discipline Area/Surface Mission Information/Telemetry 	
		<ul style="list-style-type: none"> 1) msn_surface:application_id 2) msn_surface:application_subtype_id 3) msn_surface:application_name 4) msn_surface:provider_id 5) msn_surface:flight_software_version_id 6) msn_surface:telemetry_source_name 7) msn_surface:telemetry_alternate_name 8) msn_surface:transport_protocol 9) msn_surface:communication_session_id 10) msn_surface:telemetry_source_start_time 11) msn_surface:telemetry_source_sclk_start 12) msn_surface:product_completion_status 13) msn_surface:earth_received_start_date_time 14) msn_surface:earth_received_stop_date_time 15) msn_surface:download_priority 16) msn_surface:data_size 17) msn_surface:expected_packets 18) msn_surface:received_packets 19) msn_surface:telemetry_source_host_name 20) msn_surface:expected_transmission_path 21) msn_surface:transmission_path 22) msn_surface:flight_software_mode 23) msn_surface:telemetry_source_size 24) msn_surface:telemetry_source_checksum 25) msn_surface:auto_delete_flag 26) msn_surface:virtual_channel_id 	
Time_Coordinates	The Time_Coordinates class provides a list of time coordinates.	<ul style="list-style-type: none"> 1) Product Bundle/Context Area/Time Coordinates 2) Product Collection/Context Area/Time Coordinates 3) Product Observational/Observation Area/Time Coordinates 	

		<ul style="list-style-type: none"> 1) start_date_time 2) stop_date_time 3) local_mean_solar_time 4) local_true_solar_time 5) solar_longitude 	
type	The type attribute classifies Investigation_Area according to the scope of the investigation..	<ul style="list-style-type: none"> 1)/Product Document/Context Area/Investigation Area/type 2)/Product Document/Context Area/Observing System/Observing System Component/type 3)/Product Bundle/Context Area/Investigation Area/type 4)/Product Bundle/Context Area/Observing System/Observing System Component[*]/type 5)/Product Bundle/Context Area/Target Identification/type 6)/Product Collection/Context Area/Investigation Area/type 7)/Product Collection/Context Area/Observing System/Observing System Component[*]/type 8)/Product Collection/Context Area/Target Identification/type 9)/Product Observational/Observation Area/Investigation Area/type 10)/Product Observational/Observation Area/Observing System/Observing System Component/type 11)/Product Observational/Observation Area/Target Identification/type 	
		<ul style="list-style-type: none"> 1) "Field Campaign" 2) "Individual Investigation" 3) "Mission" 4) "Observing Campaign" 5) "Other Investigation" 	ASCII_Short_String_Collapsed
value_offset	The value_offset attribute is the offset to be applied to each stored value in order to recover an original value. The observed value (Ov) is calculated from the stored value (Sv) thus: $Ov = (Sv * scaling_factor) + value_offset$. The default value is 0.	1)/ Product Observational/File Area Observational/Table Binary[*]/Record Binary/Field Binary/value_offset	
			ASCII_Real
geom:Vector_Device_Gravity_Magnitude	The Vector_Device_Gravity_Magnitude class is a vector (with magnitude) that specifies the direction of an external force acting on the articulation device, in the spacecraft's coordinate system, at the time the pose was computed.	1)/ Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector_Device_Gravity_Magnitude	
		<ul style="list-style-type: none"> 1) geom:Vector_Cartesian_Acceleration_Base 2) geom:x_acceleration 3) geom:y_acceleration 4) geom:z_acceleration 	
disp:vertical_display_axis	The vertical_display_axis attribute identifies, by name, the axis of an Array (or Array subclass) that is intended to be displayed in the vertical or "line" dimension on a display device. The value of this attribute must match the value of one, and only one, axis_name attribute in an Axis_Array class of the associated Array.	1)/ Product Observational/Observation Area/Discipline Area/Display Settings[*]/Display_Direction/vertical_display_axis	
			ASCII_Short_String_Collapsed
disp:vertical_display_direction	The vertical_display_direction attribute specifies the direction along the screen of a display device that data along the vertical axis of an Array is supposed to be displayed.	1)/ Product Observational/Observation Area/Discipline Area/Display Settings[*]/Display_Direction/vertical_display_direction	
		<ul style="list-style-type: none"> 1) "Bottom to Top" 2) "Top to Bottom" 	ASCII_Short_String_Collapsed
wavelength_range	The wavelength_range attribute specifies the wavelength range over which the data were collected or which otherwise characterizes the observation(s). Boundaries are vague, and there is overlap.	<ul style="list-style-type: none"> 1)/Product Collection/Context Area/Primary Result Summary/Science Facets/wavelength_range 2)/Product Bundle/Context Area/Primary Result Summary/Science Facets/wavelength_range[*] 3)/Product Collection/Context Area/Primary Result Summary/Science Facets/wavelength_range[*] 	

		<ul style="list-style-type: none"> 1) "Far Infrared" 2) "Gamma Ray" 3) "Infrared" 4) "Microwave" 5) "Millimeter" 6) "Near Infrared" 7) "Radio" 8) "Submillimeter" 9) "Ultraviolet" 10) "Visible" 11) "X-ray" 	ASCII_Short_String_Collapsed
geom:x_acceleration	The x component of a Cartesian acceleration vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector Device Gravity Magnitude/x acceleration	ASCII_Real <i>Units_of_Acceleration</i>
geom:x_position	The x component of a Cartesian position vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Vector Origin Offset/x position 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Vector Origin Offset/x position	ASCII_Real <i>Units_of_Length</i>
geom:x_unit	The x component of a unit Cartesian vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector Device Gravity/x unit 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[1]/Vector Solar Direction/x unit	ASCII_Real
geom:y_acceleration	The y component of a Cartesian acceleration vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector Device Gravity Magnitude/y acceleration	ASCII_Real <i>Units_of_Acceleration</i>
geom:y_position	The y component of a Cartesian position vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Vector Origin Offset/y position 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Vector Origin Offset/y position	ASCII_Real <i>Units_of_Length</i>
geom:y_unit	The y component of a unit Cartesian vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector Device Gravity/y unit 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Derived Geometry[1]/Vector Solar Direction/y unit	ASCII_Real
geom:z_acceleration	The z component of a Cartesian acceleration vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Articulation Device Parameters[2]/Vector Device Gravity Magnitude/z acceleration	ASCII_Real <i>Units_of_Acceleration</i>
geom:z_position	The z component of a Cartesian position vector.	1)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition[*]/Vector Origin Offset/z position 2)/Product Observational/Observation Area/Discipline Area/Geometry/Geometry Lander/Coordinate Space Definition/Vector Origin Offset/z position	

			ASCII_Real <i>Units_of_Length</i>
geom: z_unit	The z component of a unit Cartesian vector.	1/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Articulation_Device_Parameters[2]/Vector_Device_Gravity/z_unit 2/Product_Observational/Observation_Area/Discipline_Area/Geometry/Geometry_Lander/Derived_Geometry[1]/Vector_Solar_Direction/z_unit	
			ASCII_Real

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