





## SKA1 SDP GLOSSARY

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## ORGANISATION DETAILS

Name	SDP Consortium
Lead Organisation	The Chancellor, Masters and Scholars of the University of Cambridge The Old Schools Trinity Lane Cambridge CB1 1TN United Kingdom
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## 1 Purpose of Document

This document provides a list of acronyms, abbreviations and terms used in the Science Data Processor Consortium CDR document release. Note that there can be duplicate abbreviations, e.g. QA, and it is up to the author to disambiguate.

## 2 Acronyms and Abbreviations

Acronym or Abbreviation	Expansion
AA	Aperture Array
AAAI	Authorization, Authentication, Access and Identification
AIV	Assembly Integration and Verification
ALMA	Atacama Large Millimetre / Submillimetre Array
API	Application Programming Interface
APM	Astrometric Performance Metric
APU	Accelerated Processing Unit
AR	Acceptance Review
AR1 ..	Array Release 1
ARL	Algorithm Reference Library
AS	Australian Standard
ASKAP	Australian Square Kilometre Array Pathfinder
ATP	Acceptance Test Plan
AZ	Availability Zone
BDA	Baseline Dependent Averaging
BDD	Block Definition Diagram

<b>BGP</b>	Border Gateway Protocol
<b>BMC</b>	Baseboard Management Controller
<b>C&amp;C</b>	Component and Connector
<b>CA</b>	Consumer App or Certification Authority
<b>CAOM</b>	Common Archive Observation Model, now at version 2, a product of the Canadian Astronomy Data Centre
<b>Capex</b>	Capital Expenditure
<b>CAS</b>	Common Algorithm Software
<b>CASA</b>	Common Astronomy Software Applications (short for the software package, see below). CASA is the software package used for data reduction by (e.g.) Jansky VLA and ALMA observers
<b>Casacore</b>	A suite of programs for radio astronomy data processing. It is a set of C++ libraries (partially underlying CASA).
<b>CBF</b>	Correlator Beamformer
<b>CDR</b>	Critical Design Review
<b>CERN</b>	The European Centre for Nuclear Research
<b>CI</b>	Configuration Item
<b>CISPR</b>	International Electrotechnical Commission
<b>CLEAN</b>	A computational algorithm designed to perform a deconvolution on images
<b>COTS</b>	Commercial Off The Shelf
<b>CPU</b>	Central Processing Unit
<b>CSP</b>	Central Signal Processor (consortium of SKA)
<b>CTDS</b>	Casacore Table Data System
<b>CTRL</b>	Control

<b>DALiuGE</b>	Data Activated Liu Graph Engine
<b>DB</b>	Database
<b>DBA</b>	Database Administrator
<b>DDE</b>	Direction-Dependent Effects
<b>DDR4</b>	Double Data Rate 4 <sup>th</sup> generation dynamic random access memory
<b>DFT</b>	Direct Fourier Transform
<b>DM</b>	Dispersion Measure
<b>DOS</b>	Denial of Service
<b>DP</b>	Double Precision Floating Point
<b>DSH</b>	Dish (consortium of SKA)
<b>DSL</b>	Domain Specific Language
<b>DSM</b>	Dynamic Spectrum Mode
<b>DWDM</b>	Dense Wavelength-Division Multiplexing
<b>ECSS</b>	European Cooperation for Space Standardisation
<b>EGI</b>	European Grid Infrastructure
<b>EIA</b>	Environmental Impact Assessment
<b>EMC</b>	Electromagnetic Compatibility
<b>EMI</b>	Electromagnetic Interference
<b>EoR</b>	Epoch of Re-ionisation
<b>EPA</b>	Environmental Protection Agency
<b>EPEL</b>	Extra Packages for Enterprise Linux
<b>FDR</b>	Infiniband Fourteen Data Rate

<b>FFT</b>	Fast Fourier Transform
<b>FITS</b>	Flexible Image Transport System: an open standard defining a digital file format for storage, transmission and processing of scientific images. Several formats have been created based on FITS.
<b>FLOP / FLOPS</b>	Floating Point Operations / Floating Point Operations per Second
<b>FMEA / FMECA</b>	Failure Modes and Effects Analysis / Failure Mode Effect Criticality Analysis
<b>FOV</b>	Field Of View
<b>FPGA</b>	Field-Programmable Gate Array
<b>GbE</b>	Gigabit Ethernet
<b>GPGPU</b>	General Purpose Graphical Processing Unit
<b>GPU</b>	Graphics Processing Unit
<b>GridFTP</b>	GridFTP is a high-performance, secure, reliable data transfer protocol optimized for high-bandwidth wide-area networks.
<b>GSM</b>	Global Sky Model
<b>GUI</b>	Graphical User Interface
<b>GW</b>	Gravitational Wave
<b>HAL</b>	Hardware Abstraction Layer
<b>HCA</b>	Host Channel Adapter
<b>HDF5</b>	Hierarchical Data Format (version 5) designed to deal with large volumes of numerical data
<b>HI</b>	Neutral atomic hydrogen
<b>HPBW</b>	Half Power Beam Width
<b>HPC</b>	High Performance Computing, sometimes described in terms of national facilities
<b>HPSO</b>	High Priority Science Objective

<b>HSM</b>	Hierarchical Storage Management
<b>HTTP</b>	Hypertext Transfer Protocol
<b>IAM</b>	Identity and Access Management
<b>ICAL</b>	Iterative Calibration
<b>ICD</b>	Interface Control Document
<b>ICRAR</b>	International Centre for Radio Astronomy Research
<b>ICT</b>	Information Communication Technology (e.g. in reference to the industry)
<b>IdP</b>	Identity Provider
<b>iFFT</b>	Inverse Fast Fourier Transforms
<b>ILS</b>	Integrated Logistics Support
<b>ImageDM</b>	Image Data Model, a data model standard defined by the IVOA
<b>I/O</b>	Input / Output
<b>IP</b>	Internet Protocol / intellectual Property
<b>IPMI</b>	Intelligent Peripheral Management Interface
<b>ISO</b>	International Standards Organisation
<b>IVOA</b>	International Virtual Observatory Alliance
<b>IXR</b>	Intrinsic Cross-polarisation Ratio
<b>JVLA</b>	Jansky Very Large Array
<b>LAN</b>	Local Area Network
<b>LFAA</b>	Low Frequency Aperture Array
<b>LHC</b>	Large Hadron Collider (CERN)
<b>LML</b>	Lifecycle Modeling Language



<b>LoC</b>	Lines of Code / Latency-optimised Cores
<b>LOFAR</b>	Low-Frequency Array (radio telescope)
<b>LRU</b>	Line Replaceable Unit
<b>LSM</b>	Local Sky Model
<b>LTS</b>	Long Term Storage
<b>MAID</b>	Massive Array of Idle Drives
<b>MeerKAT</b>	64-dish Karoo Array Telescope
<b>MJD</b>	Modified Julian Date
<b>MIL-STD</b>	Military Standard
<b>MLC</b>	Multi-Level Cell
<b>MOTS</b>	Modified-Off-The-Shelf software
<b>MPI</b>	Message Passing Interface - a standardized and portable message-passing standard; a communication protocol for programming parallel computers.
<b>MPLS</b>	Multi-Protocol Label Switching
<b>MS / MSv3</b>	Measurement Set (e.g. MSv3)
<b>MTBF</b>	Mean Time Between Failure
<b>MTU</b>	Maximum Transmission Unit
<b>MTR</b>	Metrics
<b>MTTR</b>	Mean Time to Repair
<b>MVP</b>	Minimal Viable Product
<b>MWA</b>	Murchison Widefield Array
<b>NEMA</b>	National Environment Management Act (South Africa, Act 1998)
<b>NIC</b>	Network Interface Controller

<b>NOHSC</b>	National Standard for Occupational Noise
<b>NRAO</b>	National Radio Astronomy Observatory (US)
<b>NREN</b>	National Research and Education Network
<b>NSDN</b>	Non-Science Data Network
<b>NVME</b>	Non-volatile Memory Express
<b>NVRAM</b>	Non-volatile Random Access Memory
<b>NZS</b>	New Zealand Standard
<b>ObsCore</b>	Observation Data Model Core Components, a data model standard defined by the IVOA
<b>OCLD</b>	Optimised Candidate List and Data
<b>OHS</b>	Occupational Health and Safety
<b>OL</b>	Offline
<b>ODT</b>	Apache Object Oriented Data Technology
<b>Opex</b>	Operational Expenditure
<b>OPM</b>	Polarimetric Performance Metric
<b>ORR</b>	Operational Readiness Review
<b>OS</b>	Operating System
<b>OST</b>	Observatory Support Tools
<b>OTS</b>	Off-The-Shelf
<b>PA</b>	Producer App
<b>PAF</b>	Phased Array Feeds
<b>PB</b>	Petabyte
<b>PBS</b>	Product Breakdown Structure
<b>PCI</b>	Peripheral Component Interconnect

<b>PCIe</b>	Peripheral Component Interconnect Express
<b>PCM</b>	Phase-Change Memory
<b>PDR</b>	Preliminary Design Review
<b>PDU</b>	Power Distribution Unit
<b>PFS</b>	Parallel File System
<b>PHS&amp;T</b>	Package, Handling, Storage and Transport
<b>PI</b>	Principal Investigator
<b>PPM</b>	Photometric Performance Metric
<b>PS</b>	Persistent Storage
<b>PSS</b>	Pulsar Search Sub-system
<b>PSF</b>	Point Spread Function
<b>PSRFITS</b>	A standard FITS-based format for pulsar data files
<b>PST</b>	Pulsar Timing Sub-system
<b>QA</b>	Quality Assessment in terms of SDP engineering. Also Quality Assurance
<b>QAS</b>	Quality Attribute Scenario (a SEI concept)
<b>QoS</b>	Quality of Service
<b>QPI</b>	QuickPath Interconnect
<b>QR</b>	Qualification Review
<b>QTP</b>	Qualification Test Plan
<b>R<sub>max</sub></b>	Sustained Performance
<b>R<sub>peak</sub></b>	Peak Performance
<b>RA</b>	Requirements Analysis

<b>RAM</b>	Reliability Availability Maintainability (analysis)
<b>RB</b>	Requirements Baseline
<b>RBD</b>	Reliability Block Diagrams
<b>RDMA</b>	Remote Direct Memory Access
<b>REQ</b>	Requirement
<b>REST</b>	Representational State Transfer Technology: an abstraction of the WWW architecture with a particular style and set of constraints. Web services are sometimes described as 'RESTful.'
<b>RFI</b>	Radio Frequency Interference
<b>RMR-NIC / RNIC</b>	RDMA Network Interface Card
<b>ROM</b>	Rough Order of Magnitude (used in estimation)
<b>RPM</b>	Radiometric Performance metric
<b>RT</b>	Real time (as opposed to OL, offline)
<b>SaDT</b>	Signal and Data Transport (consortium of SKA)
<b>SAFe</b>	Scaled Agile Framework
<b>SANS</b>	South African National Standard
<b>SAML</b>	Security Assertion Markup Language
<b>SATA</b>	Serial ATA
<b>SDM</b>	Science Data Model
<b>SDN</b>	Software-Defined Network(ing)
<b>SDP</b>	Science Data Processor / Software Development Plan
<b>SEI</b>	Software Engineering Institute, whose processes the SDP has been following in software design
<b>SEP</b>	Software Engineering Plan

<b>SIA</b>	Simple Image Access, a protocol associated with the IVOA
<b>SIB</b>	Standards Information Base
<b>SIN</b>	Sine projection
<b>SKA</b>	Square Kilometre Array
<b>SKA1_Low</b>	A phased array of simple dipole antennas to cover the frequency range 50 to 350 MHz
<b>SKA1_Mid</b>	An array of dish antennas to cover the frequency range 350 MHz to 14 GHz
<b>SKAO</b>	SKA Office (sometimes called SKA Headquarters). This is located in Jodrell Bank, UK.
<b>SMF</b>	Single-Mode Optical Fibre
<b>S/N</b>	Signal to Noise
<b>SoC</b>	System on a Chip
<b>SODA</b>	Server-side Operations for Data Access, a protocol associated with the IVOA
<b>SP</b>	Single Precision Floating Point
<b>SPEAD</b>	Streaming Protocol for Exchanging Astronomical Data
<b>SpectralIDM</b>	Spectral Data Model, a data model standard defined by the IVOA.
<b>SPOCLD</b>	Single Pulse Optimised Candidate List and Data
<b>SPM</b>	Spectrometric Performance Metric
<b>SRC</b>	SKA Regional Centre
<b>SSA</b>	Simple Spectral Access, a protocol associated with the IVOA
<b>SSD</b>	Solid State Disk
<b>SSH</b>	Secure Shell
<b>SUITP</b>	Software [Unit/Integration] Test Plan
<b>SWE</b>	Software Engineering

<b>SysML</b>	Systems Modelling Language
<b>TANGO</b>	TaCO Next Generation Objects - an object-orientated control system used in communications between TM and SDP
<b>TAP</b>	Table Access Protocol, a protocol associated with the IVOA
<b>TB</b>	Terabyte
<b>TBC</b>	To Be Confirmed
<b>TBD</b>	To Be Decided / Determined / Defined
<b>TCD</b>	Telescope Configuration Data
<b>TCP/IP</b>	Transmission Control Protocol / Internet Protocol
<b>TDD</b>	Test Driven Development
<b>TEC</b>	Total Electron Content
<b>TM</b>	Telescope Manager (consortium of SKA)
<b>TMC</b>	Telescope Monitoring and Control (relates to TM)
<b>TOA</b>	Time of Arrival
<b>ToO</b>	Target of Opportunity
<b>TS</b>	Technical Specification
<b>ToR</b>	Top of Rack
<b>UDP/IP</b>	User Datagram Protocol / Internet Protocol
<b>UML</b>	Unified Modeling Language
<b>VDIF</b>	VLBI Data Interchange Format
<b>VLAN</b>	Virtual LAN
<b>VLBI</b>	Very Long Baseline Interferometry
<b>VM</b>	Virtual Machine

<b>VO</b>	Virtual Observatory
<b>VOEvent</b>	An XML standard used to report astronomical events, adopted by the IVOA
<b>VOTable</b>	An XML standard for the interchange of data represented as a set of tables
<b>VPN</b>	Virtual Private Network
<b>X.509</b>	A standard for certification systems
<b>WA</b>	Western Australia
<b>WAN</b>	Wide Area Network
<b>WBS</b>	Work Breakdown Structure
<b>YoT</b>	Year On Telescope

### 3 Terms

Term	Definition
<b>A-projection</b>	An algorithm to apply direction-dependent effects (such as beam terms) in imaging through convolutions in UV-space.
<b>Accelerator</b>	A specialised type of computer processor that allows high bandwidth and/or parallel processing. Typically refers to a GPU.
<b>Apache Spark</b>	Apache Spark is an open-source distributed general-purpose cluster-computing framework.
<b>Architecture</b>	Architecture and software architecture are synonymously used for the combination of system and domain specific application architecture.
<b>Automatic code generation</b>	Generation of source code with a tool from a model.
<b>Base (numerical)</b>	See note below under Gigabyte.
<b>Baseline</b>	This has three broad meanings within the SDP and these must be determined by context (planning term, SKA phase, interferometry term).
<b>Baseline Design</b>	Initial design parameters for the first instance of the SDP. These are captured in the document: SKA-TEL-SKO-DD-001 System Baseline Design.
<b>Baseline-Dependent Averaging</b>	Allows differing integration periods for different baseline lengths.
<b>Batch</b>	Batch processing is opposed to real-time processing, and was at one time called offline. Typically this is where data is retrieved from the buffer for processing.
<b>Buffer</b>	Accumulates visibility data after the ingest pipeline for use in subsequent processing. A type of storage.
<b>Calibration</b>	Calibration has several context-dependent meanings for the SDP, and this should be elaborated in the specific document to which it applies.



<b>Capability</b>	A grouping of sub-system elements that map directly to a particular science mission or engineering task. This term has been superseded but was used heavily during the design process. It is still used by other consortia.
<b>Centi-SDP</b>	A scaled-down system to roughly 1% of the full SDP system for SKA1 (in terms of FLOPS).
<b>Code coverage</b>	Percentage of the software that has been executed (covered) by the test suite.
<b>Commensal observation</b>	Running more than one set of data reductions on the same set of data, eg. running the same input data through the spectral line pipeline and continuum pipeline at the same time. This contrasts with sub-arraying.
<b>Common Algorithmic Software</b>	The collection of domain-specific algorithmic software that is shared between pipelines.
<b>Components*</b>	The principal computational elements and data stores that execute in a system.*
<b>Component and Connector (C&amp;C) style*</b>	A kind of style that introduces a specific set of component and connector types and specifies rules about how elements of those types can be combined. Additionally, given that C&C views capture runtime aspects of a system, a C&C style is typically also associated with a computational model that prescribes how data and control flow through system designed in that style.*
<b>Computational efficiency</b>	The percentage of the theoretically available processing power (see peak performance) that can be achieved for useful processing (see sustained performance). Depends on hardware, application and implementation.
<b>Compute Platform</b>	The collection of hardware systems in the Science Data Processor and the software and services required to efficiently use these systems.
<b>Compute Rack</b>	A self-contained resource pool that can be procured as a unit.
<b>Conditioning</b>	Manipulating the data to make it useable by subsequent steps in a pipeline.

<b>Configuration Database</b>	The Configuration Database is an intermediate store for control information relating to SDP components, tracking the dynamic configuration of the SDP.
<b>Configuration Item</b>	A Configuration Item (CI) is a significant component of the project selected to be put under configuration control.
<b>Connector*</b>	See Component. A runtime pathway of interaction between two or more components.*
<b>Construction Phase</b>	The phase of SKA development following the Pre-construction (design) Phase and ending with fully integrated and accepted telescope systems.
<b>Continuum Imaging</b>	The production of a continuum image.
<b>Continuum Pipeline</b>	A pipeline to produce a continuum data product.
<b>Correlator product</b>	Output of the CSP correlator. Mainly a matrix comprised of cross-multiplied antenna or station products, commonly referred to as visibilities.
<b>DALiuGE</b>	DALiuGE is a workflow graph execution framework, specifically designed to support very large scale processing graphs for the reduction of interferometric radio astronomy data sets.
<b>Dask</b>	Dask is a flexible library for parallel computing in Python.
<b>Data Delivery Platform / Delivery Platform</b>	A software stack whose purpose is to transfer Data Products to the OST user or to a SKA Regional Centre. It enables the user to query and request data, and allows for the transfer of the requested data.
<b>Data Driven</b>	This means that a Data Object with a managed data life cycle can trigger an action when changing state.
<b>Data Island</b>	A Data Island is a logical construct with the responsibility for storing data used and produced by Execution Engine instances by providing a unique namespace for access.
<b>Data Models</b>	Schematics showing relationships between Data Entities or Data Objects.
<b>Data Product / Science Data Product</b>	See SDP Data Product.

<b>Data Queues</b>	The Data Queues component handles medium-rate real-time information such as calibration solutions, alerts or Quality Assessment data exchanged between model databases, processing and Quality Assessment. See Operational_System_CC_view.
<b>DataLink</b>	Datalink is an IVOA protocol which defines a new category of services. This allows linking to datasets with various resources such as other related datasets, metadata or other services
<b>Double Buffering / Multiple Buffering</b>	The use of two or more buffers in alternating roles. For example, while buffer A is used to store data, buffer B is used to access data for processing.
<b>Drift scan</b>	A technique which involves a continuously changing pointing centre and stepwise changing phase centres, with the whole field then jointly deconvolved.
<b>ECSS-E-ST-40C</b>	This document from ECSS defines the principles and requirements applicable to space software engineering.
<b>ECSS-M-ST-40C</b>	This document from ECSS defines the configuration management and information/documentation requirements for space projects. The document is structured into two main parts, the first part presenting the processes and the second one providing the detailed requirements.
<b>Element*</b>	An architecture building block native to a style. An element can be a module, a component, or a connector, or an element in the architecture of a system.*
<b>Eventually Consistent Replication</b>	A model used in distributed computing to achieve high data availability.
<b>Execution Control</b>	All processing is steered by Execution Control, which provides the top-level TANGO control interface in terms of attributes and commands to the Telescope Manager.
<b>Execution Engine</b>	The component that initiates and coordinates functionality required for the execution of science pipelines. An Execution Engine is a logical construct enabling scalability and parallelism in processing. An Execution Engine is specifically a (configured) software instance, such as a Dask Programming running in a distributed fashion.

<b>Execution Framework</b>	Execution Frameworks are software packages (modules), possibly adapted to our architecture (e.g. implement the Execution Framework interface and Processing Wrappers).
<b>Faceted algorithm / Faceting</b>	An algorithm that is able to synthesise data from non-coplanar telescope baselines (such as may result from the Earth's curvature or rotation).
<b>Filterbank</b>	An array of FIR (Finite Impulse Response) filters feeding into a FFT that splits a broadband signal into narrowband channels.
<b>Gigabyte / GB</b>	In the SDP base 10 is used. 1 Gigabyte is 1,000,000,000 bytes
<b>Gibibyte / GiB</b>	1 Gibibyte is $2^{30}$ bytes = 1,073,741,824 bytes <a href="https://en.wikipedia.org/wiki/Binary_prefix">https://en.wikipedia.org/wiki/Binary_prefix</a>
<b>Global Sky Model</b>	The overall source catalogue for observations. The SDP maintains the GSM database.
<b>Gridding</b>	The process by which visibilities, which may be measured at any real position in the <i>uv</i> -plane, are aggregated or interpolated to discrete grid positions so that the (inverse) FFT may be computed.
<b>High Performance Computing</b>	Generally, computing at the forefront of contemporary available processing capacity.
<b>ICAL</b>	Iterative self-calibration stage of a batch processing block. Might get implemented using Standard Iterative Calibration or Model Partition Calibration type algorithms.
<b>i-projection</b>	An algorithm to apply direction-dependent ionospheric effects in imaging through convolutions in UV-space.
<b>Image cube</b>	3D images with spatial coordinates as the two first axes and the frequency (velocity channels) as third axis.
<b>Infiniband</b>	A type of high-throughput network link typically used in high-performance computing systems and supercomputers.
<b>Ingest Processing</b>	The processing required to ingest data into the SDP.
<b>Integration testing</b>	Testing in which software components, hardware components, or both are combined and tested to evaluate the interaction between them.

<b>Interconnect System</b>	The complex interconnects between the various components of the SDP. This relates to the Hardware Abstraction Layer.
<b>Intermediate Data Product</b>	A data product created during pipeline processing which has limited duration, and is not stored as a SDP Data Product in the SDP Data Product Catalogue.
<b>Kanban</b>	A quality improvement methodology.
<b>Linux Containers</b>	An instance of an OS Container. Provides an operating system-level isolation method for running multiple isolated Linux systems that have their own process and network spaces.
<b>Local Sky Model</b>	A subset catalogue for the observation being processed of the overall source catalogue, see Global Sky Model.
<b>Logical model</b>	Implementation-independent model of software items used to analyse and document software requirements.
<b>Long Term Storage</b>	Previously known as the Long Term Archive, (Science) Data Archive, or Archive, this is where data is stored. It stores the Science Data Products.
<b>Low-latency interconnect</b>	A network infrastructure optimised for low-latency communication, rather than high throughput. Example: Infiniband.
<b>Lossless compression</b>	Any data reduction technique that allows the original input data to be perfectly reconstructed.
<b>Lossy compression</b>	Any inexact data reduction technique; i.e. that approximates the original input data in a way that is not reversible.
<b>Major cycle</b>	An iteration of continuum image deconvolution that transforms observed visibilities to the image domain, fits a sky model and transforms the model back to the visibility domain in order to produce residual visibilities as input to the next iteration.
<b>Master Controller</b>	The Master Controller is responsible for the control of top-level non-processing components and all sub-components of the SDP. It is needed to ensure that the appropriate emergent behaviour of the SDP system is achieved in response to command requests originating from the Telescope Manager.

<b>Minor cycle</b>	See Major cycle. A sub-iteration of continuum image deconvolution that incrementally improves the fit of a sky model to observed visibilities in the image domain.
<b>Metadata</b>	A set of data that describes and gives information about other data, usually following a standard for astronomical data.
<b>Middleware</b>	Middleware is computer software that provides services to software applications permitting communication access via an Application Programming Interface (API)
<b>Milli-SDP</b>	A vastly scaled-down system to roughly 0.1% of the full hardware of the SDP system for SKA1 (in terms of FLOPS).
<b>Mirror Science Archive</b>	A repository which is maintained with identical data to the Science Archive.
<b>Model Databases</b>	The Model Databases component provides Science Data Model information, especially Telescope State, Telescope Configuration and Sky Model data.
<b>Module*</b>	An implementation unit of software that provides a coherent set of responsibilities.*
<b>Mosaicking (Mosaicing)</b>	A technique of extending the field of view by taking ‘snapshots’ of fields with adjacent pointing centres and combining data to create an image. In SDP this means multiple phase and pointing centres (which coincide) but joint deconvolution of bright sources from the entire mosaicked field.
<b>Near real time computing</b>	Processing with a deadline. Although in our application there is no hard deadline as in the classic definition of real-time processing, the first stage of the SDP needs to keep up with the CSP data stream. To distinguish from classic real-time processing, we call this near real-time processing.
<b>Non-precious data</b>	Data which, if lost, does not need to be retrieved.
<b>Nvidia</b>	A company that produces GPUs and mobile CPUs, including the Tegra and Tesla families.
<b>Observatory Support Tools</b>	This is a collection of capabilities (software tools, applications, hardware) used by observatory staff principally for quality assessment of science data.

<b>OpenStack</b>	OpenStack is a free and open-source software platform for cloud computing.
<b>Operational System</b>	A high-level conceptual entity providing the facilities for operating the SDP.
<b>OS Containers</b>	See Linux Containers.
<b>Peak Performance</b>	Maximum theoretically available compute power for a particular system.
<b>Platform</b>	The Platform is a collection of hardware and software responsible for starting and maintaining the SDP Operational System components.
<b>Pre-construction Phase</b>	The phase of SKA design activities running from late 2013 into 2017.
<b>Processing Block</b>	A Processing Block is an atomic unit of processing from the viewpoint of scheduling. A Processing Block is a complete description of all the parameters necessary to run a workflow in SDP. Processing Blocks can be for Batch or Real-Time processing, and can be of an extensible number of types depending on the type of observation data (e.g. Imaging transient detection).
<b>Processing Block Controller</b>	The Processing Block Controller is responsible for executing Science Data Workflows implementing Real-Time and Batch Processing.
<b>Processing Controller</b>	Scheduling and processing blocks configured by TM are handled by the Processing Controller. The Processing Controller schedules the execution of batch Processing Blocks according to resource availability. Processing Blocks are instantiated by the Processing Block Controller.
<b>Quality of Service</b>	Quality of service (QoS) is the overall performance of a computer network, particularly the performance seen by the users of the network.
<b>Resource</b>	A physical or virtual component of limited availability within the system, i.e. time of execution, resident memory, CPU cycles, number of hosts, bandwidth usage, power consumption, and so on.
<b>RESTful web services</b>	Web services that adhere to the architecture of REST (see Acronyms and Abbreviations).
<b>Scheduler</b>	The program that arranges the processing of jobs in the appropriate sequence.

<b>Scheduling Block</b>	A Scheduling Block is created by TM and is an atomic unit of observing from the viewpoint of scheduling. A Scheduling Block consists of a series of instructions to the control system of a given telescope (namely, TM) that are required in order to carry out a series of tasks that, when performed together, result in the taking of a Dataset. A Scheduling Block results in the creation of one or more Processing Blocks in the SDP.
<b>Science Data Model</b>	A major collection of data models used in the processing of astronomical data and in the creation of Science Data Products. It contains the Local Sky Model, Telescope State Information, Calibration Solutions, SDP QA metrics, Processing Block, Processing Logs, and other required ObsCore elements.
<b>Science Data Processor</b>	The collection of software, hardware, and processes which takes data from the Central Signal Processor and Telescope Manager, processes it, and delivers it ultimately to the SKA Regional Centres or directly to the SKA users.
<b>Science Data Product</b>	See SDP Data Product. Science Data Product is the more generic term used for data products once preserved and delivered by SDP.
<b>Science Data Product Catalogue</b>	The query-able metadata descriptions of indexed Science Data Products. It includes associated scientific metadata that can be queried and searched and includes all information so that the result of a query can lead to the delivery of data.
<b>Science Pipeline Workflows</b>	See Workflows.
<b>Scrum</b>	A part of Agile project management methodology, it is an iterative and incremental software development framework for managing product development.
<b>SDP Data Product</b>	A collection of data objects ready for long term storage and subsequent use. Typically a data product will include metadata and have successfully completed QA. Data products which the SDP will deliver include: Transient Source Catalogue, Science Product Catalogue, Image Products, Calibrated Visibilities, Sieved Pulsar and Transient Candidates, Pulsar Timing Solutions, and Dynamic Spectrum Data.
<b>Self Calibration (Self cal)</b>	The process of estimating the telescope errors. The “self” refers to the fact that we use the source itself (and the associated data) to solve for the telescope based errors.



<b>Server</b>	The server is the smallest decomposable unit of computing hardware in the SKA SDP. A server consists of a number of components, not all of which are required for all servers
<b>SKA-Common</b>	A logical component at SKAO level containing objects common to all telescopes (currently LOW and MID).
<b>SKA Regional Centre</b>	An approved off-site facility to which requested Science Data Products will be delivered..
<b>Slurm</b>	This is a job scheduler used by many supercomputers and computer clusters
<b>Standard Iterative Calibration</b>	Algorithm family for performing self-calibration of visibility data using traditional self-calibration approaches. See workflows view.
<b>Stateless</b>	Stateless means that there is no record of previous interactions and each interaction request has to be handled based entirely on information that comes with it.
<b>Station</b>	A circular array of antenna elements that has a clear physical boundary defined by the station diameter, whose output signals are connected individually to the SKA1-low beam-former.
<b>Steady-state maintenance</b>	The maintenance period for which acceptance has been performed and any SLA prevails.
<b>Subarray</b>	A subarray (also referred to as sub-array) is a subdivision of an SKA telescope that can be scheduled and be operated independently of other subarrays. A subarray constitutes a set of resources (i.e. receptors, correlator slices...) and can be as large as the whole telescope array, or a single constituent item. A subarray is only prevented from being created by resource constraints.
<b>Sub-arraying</b>	Separate streams of data being channelled through separate pipelines simultaneously.
<b>Sub-band</b>	A subdivision of a frequency band.
<b>Sustained performance</b>	Actual achieved, useful computational performance for a particular application on a particular system. Depends on hardware, application and implementation (among others).

<b>TANGO</b>	The TANGO control system is a free open source device-oriented controls toolkit for controlling any kind of hardware or software. It is used to provide control and monitoring between SDP and TM during processing through a TANGO Control Interface (TANGO Façade).
<b>Telescope State Information</b>	A collection of real-time parameters and values that capture the status, operating state and behavioural characteristics of the telescope. It includes a dynamic computational model of the telescope (which was once called Telescope Model) used to answer all queries about the state of the Telescope. These are made available for subscription as TANGO attributes.
<b>Test case</b>	Set of test inputs, execution conditions and expected results developed for a particular objective such as to exercise a particular program path or to verify compliance with a specified requirement.
<b>Tier n site</b>	Relating to data storage. The Tier 0 site is at the location where the data has been generated (South Africa or Australia). A Tier 1 site is the first storage site receiving data directly from a Tier 0 site.
<b>Tiered Data Delivery / Data Transport Service</b>	The method, software and processes by which bulk data is transported to OST Users or to SKA Regional Centres. Also referred to as 'Bulk Data Transport'.
<b>Time smearing</b>	Degradation of an image due to the duration of an observation which is affected by the Earth's rotation.
<b>uv buffer</b>	See visibility buffer.
<b>uv-coverage</b>	Plot of the <i>uv</i> -plane as sampled by a measurement device.
<b>uv data point</b>	A measurement originating from a single pair of antennas in a single frequency channel that gives a single datum to be placed in the <i>uv</i> -plane.
<b>uv-plane</b>	A 2D grid of values that is equal to the 2D Fourier-transform of the angular distribution (brightness distribution) of observed sources in the sky.
<b>View Packet*</b>	The smallest bundle of view documentation you would show an individual stakeholder.*
<b>Virtual Machine</b>	This is an emulation of a computer system, based on the computer architecture and specifics of a real or hypothetical computer.

<b>Virtual Observatory</b>	A collection of interoperating data archives and software tools that comply to IVOA standards which govern its data models, access protocols, data formats and service registries.
<b>Voxel</b>	A voxel represents a value on a regular grid in three-dimensional space.
<b>Visibilities</b>	The raw <i>uv</i> data obtained from the correlator of an interferometry-based radio telescope, representing a set of measurements in the <i>uv</i> -plane.
<b>w-projection</b>	An algorithm that is able to synthesise data from non-coplanar telescope baselines (such as may result from the Earth's curvature or rotation).
<b>w-snapshots</b>	An algorithm based on a combination of w projection and snapshot imaging, for controlling the size of the "W" convolution kernel, which overcomes some of the deficiencies of wide-field radio interferometric telescopes.
<b>Workflows</b>	(Also Science Pipeline Workflows, Science Data Workflows). Data-driven pipeline represented as a graph of workflow stages. A workflow stage defines a unit of work, which might get performed by a certain part of the SDP system (e.g. a SDP service or an Execution Engine). Workflow stages can have dependencies on each other and use resources assigned to the Processing Block to perform work.

\* Descriptions marked by an asterisk are taken from *Clements et al (2011), Documenting Software Architectures Views and Beyond, 2nd ed.*