

Legend Notes

Units are omitted for simplicity sake.

This is a graphical representation of a possible extension of the OME data model developed by members of the Imaging Working Group of the 4D Nucleome consortium. The graph utilizes the Entity-Relationship formalism. In this formalism information about a real world situation/thing

(in our case a Microscope and an image acquired using that instrument) are represented by three types of model elements:

1) Entities = Boxes; 2) Relationships = lines connecting boxes; 3) Attributes = fields within boxes When describing a real life situation/thing:

1)ENTITIES corresponds to NOUNS = the things we want to collect information about.

2) RELATIONSHIPS corresponds to VERBS = actions/state/occurrence that connect Entities with each other

3) ATTRIBUTES corresponds to ADJECTIVES = the actual information about each Entity we want to collect

In order to read the schema please start from INSTRUMENT and from and IMAGE for the Specifications and Settings section respectively. Then follow the lines to the connected boxes and think something like: 1) An Instrument has a Microscope_Body, might rest on a Microscope_Table, and has a Light_Source etc.; 2) An Image was produced as part of a specific Experiment, was collected in a specific Imaging_Environment, was collected using specific Microscope_Settings etc.

IMAGE ImagingEnvironment ACQUISITION O2Percent Settings MicroscopeSettings D (MicroscopelD) TotalEffectiveMagnification **TIRFSettings** Description ThroughLens TIRFAngle — — — — — A description for the TIRFsetting [plain-text multi-line string] Geometry ObjectiveSettings ID (ObjectiveID CorrectionCollar Description ImmersionRefractiveIndex MeasuredRefractiveIndex A description for the Microbeam Temperature [plain-text multi-line string] LightSourceSettings TiffData MicrobeamManipulation D (LightSourceID) Attenuation FirstZ **◯** Wavelenght Type FirstT WavelengthUnit MechanicalCalibratio ExperimenterRef FirstC PlaneCount PowerAtSample UUID MeasuredLateralDrift MetaDataOnly MeasuredFocalDrift **Image** Description MeasuredSettlingTime A description for the experiment AutoFocusRef BinData AcquisitionDate [plain-text multi-line string] AnnotationRef SizeX Compression ghtSourceCouplingRo BigEndian Lenght ID (CouplingID) Experiment PhysicalSizeX hysicalSizeY hysicalSizeZ FilterSetRef SamplePositionX SamplePositionY -TimeIncrement SamplePositionZ LabellingMethod ID (FilterSetID) AdditionalLensRef hannelOrder SamplePositioningRef ExperimenterRef ignificantBit ID (LensID) FocalPosition nterleaved ExcitationFilterRef igEndian Sample ID (FilterID) PrismRef age/Description trumentRef Has Timestamp SamplePositioningRef ID (PrismID) And ExposureTime Name AutoFocusRef StandardDichroicRe HashSHA1 MountingMedium MountingMediumRefractiveInde> AnnotationRef Sample/Description olarizationOpticsRe ID (MirrorID) AnnotationRef LightSourceSettings ID (PolarizationOpticsID) EmissionFilterRef ID (LightSourceID) Attenuation **AdditionalFilterRe** ID (FilterID) OpticalCalibration **OpticalCalibration** Wavelenght ImageRef ID (FilterID) **AdditionalOptics** Channel D (ImageID) MedianSpotSize FWHM AdditionalMirrorRe MedianTheoretical_FWHM Channel MinSpotSize FWHM Optical MinTheoretical FWHM Channel ID (MirrorID) MaxSpotSize FWHM ActualMountedAngle CalibrationReportRef MaxTheoretical_FWHM ZSpotSize FWHM | Acq Illu| Name ID (FileURI) ZTheoretical FWHM Cor Pin SamplesPerPixel Children Entities (choose on OpticalCalibrationSoftware Planarity Exc Acd IlluminationType Asymmetry Emi Cor PinholeSize | DetectorSettings-AP| LateralChromaticShift Flud Exc AcquistionMode CameraSettings Children entities (choose one NDI Emi ContrastMethod AxialChromaticShift ID (DetectorID) Poc Flu ExcitationWavelenght EffectiveOffset Binning Col ND EmissionWavelength AnalogToDigitalConverter Integration ColoredBeadsSlide Poc Fluorophore CameraFieldOfView Col NDFilter ReadoutRate BeadSize PockelCellSetting FrameRate BeadsConcentration OperatingTemperature AnnotationRef BeadVolume OpticalStandard-APE BeadEmissionWavelenght ID (AnnotationID) Manufacturer Description CalibrationSlide SerialNumber description for the annotation PMTGain LotNumber FieldCalibration [plain-text multi-line string] PMTVoltage SpecsFile FlatFieldImageRef CalibratedMeasure EffectiveZoom Ref AnnotationRef ID (ImageID) DNAOrigami Name AnnotationRef ID (AnnotationID) AnnotationRef CommentAnnotation Children Entities (choose one Value Namespace ExcitationCalibratio Annotator (ExperimenterID) ObservedExcitationWavelength ObservedPowerAtObjective ObservedExcitationIrradiance ObservedExcitationVariance CalibrationMap DetectorCalibration MetricType IlluminationIntensity 4 NrOflmages Row

Intensity

Calibration-APE

IntensityCalibrationToolRe

Description

AnnotationRef

CellNr

CellValue