MICROSCOPE IMAGE ACQUISITION WavelengthRange Specifications Settings Children Entities (choose on WavelenghtProfileFile | WavelenghtProfileFile GenericExcitationSource MapAnnotation [Sub-Element] Inverted Type Tuneable Pulse LaserMedium IsPumped RepetitionRate WavelenghtProfileFile EnvironmentControl FrequencyMultiplication LEDModule (Wavelength) (PockelCell) MicroscopeTable LaserClass IsPump Position PulseDuration CutOn Acousto-OpticalDeviceRef WavelenghtProfileFile TemperatureAccuracy WavelengthRange MultiLaserEngine TemperatureControlled Children Entities Children Entities (choose on SampleOptics Positioning-APE MechanicalStage LightSourceCoupling-AF LightGuide MirroringDeviceRef PiezoelectricStage ID (MirroringDeviceID) IS-A RefractiveIndex XYPositionLinearityError NumericalAperture CouplingLensRef Temperature ZTravelRange AnnotationRef _____ Geometry H------ID (OpticalApertureID) ZPositionLinearityError _____ MaterialName Children Entitie ZMaxVelocity (extension base) SingleMode FocusingDevice-APE OpticsHolderRef O2Percent WaveguideMode Objective MapAnnotation ZSettlingTime Map [Sub-Element] Diameter ID (OpticsHolderID) Description [Sub-Element] Information (extended by) ObjectiveTurret StageType extends) FreeBeam RecommendedImmersion PolarizationOpticsRef ZDrive Experiment Namespace Focusing Annotator (ExperimenterID) MicroscopeSettings Reference DirectMount ID (PolarizationOpticsID) AnnotationRef Magnification MountType (extension base) Purpose (was Type) D (MicroscopelD) CalibratedMagnification -----Description IndividualObjectiv FocusStabilizationDevic PrismRef ExperimenterRef AnnotationRef TotalEffectiveMagnification **`** Focusing WorkingDistance A description for the annotatio Children Entities Description [Sub-Element] MicroscopeTubeRef VendorBinData [plain-text multi-line string] MagnificationChangerRef AcquisitionSoftware (choose on ObjectiveRef ExcitationFilterRef WavelenghtOfReflectedBeam ImagingMethod _____ AnnotationRef magingMethodTermAcession AnnotationRef MicroscopeTable BeamExpander ID (AnnotationID) ContrastModulation /isualization Method PhaseContrastType sualizationMethodTermAccessior Version ExperimentRef Value D (MicroscopeTableID) ExperimenterRef CorrectionCollar (was DichroicRef) TagTermAccession ExperimentGroupRef |---|----------Collimator extends) CorrectionCollarType luorophoreType ______ _ _ _ _ _ ID (LightSourceID) D (MirroringDeviceID) ReleaseDate AnnotationRef Attenuation TiffData AcquisitionDate [Sub-Element **○** Wavelenght rontFocalLength Publication Description [Sub-Element] Condenser BackFocalLenght ParfocalizingDistance Sample OutputPower ID (FilterID) ojectiveViewField | FirstT FirstC AnnotationRef ExcitationFilterRef PlaneCount MicroscopeTube BiologicalOrigin LiveSample AnnotationRef MetaDataOnly ID (CouplingID) Organism OrganismTermAccession Pixels SampleType OrganismPart ID (MirroringDeviceID) OrganismPartTermAccession BinData ID (FilterID) (extension base) SamplePreparationMethod ______ EmissionFilterRef PixelType (was Type) DarkFieldStop SamplePreparationMethodTermAccession Compression SignificantBits Children Entities (choose one Manufacturer ID (FilterID) Interleaved MountingMediumRefractiveIndex SerialNumber FacingTheObjective ID (MirrorID) AnnotationRef HoffmanSlitPlate FilterCubeRef FilterCube LotNumber NGFFData SpecsFile ExcitationFilterRef _____ Optics Holder Position | | ID (FilterID) IrisDiaphragm FilterCubeRef PhysicalSizeX ID (FilterID) O-----FilterSlider PhysicalSizeY FilterSet **ObjectiveSettings** ManufactuerSpecs) ID (FilterCubeID) PhysicalSizeZ AdditionalVendor Timeincrement つ (ObjectiveID) Plane ID (MirrorID) PhaseRing ExcitationFilterRef CorrectionCollarPosition FilterCubeTurret AnnotationRef (was Correcion Collar) | Namespace mmersionMedium (was Mediui PhaseNumber Annotator (ExperimenterID) CenterStopDiameter ImmersionRefractiveIndex GenericFilterRef AnnotationRef CoverGlass (extends (was RefractiveIndex) SlitWidth FilterWheel StandardDichroicRef ID (FilterID) MirroringDeviceRef FilterCube Description ManufactuerSpecs) AnnotationRef St St Timestamp (was DeltaT) MeasuredRefractiveIndex VarelRing ID (MirroringDeviceID) D (MirroringDeviceID) Temperature | A| St| ExposureTime A description for the annotation. DimensionMap AdditionalLensSetting H| St| StagePositionX (was PositionX) risAperture [plain-text multi-line string] OpticsTurret EmissionFilterRef CoverGlassNr. LensRef - Al StagePositionY (was Position) CoverGlassThickness | Ha StagePositionZ (was PositionZ) ID (LensID) TransmittanceRange Compression AnnotationRef Pi -- AnnotationRef Function ______ BigEndian Children Entities ID HashSHA1 [Sub-Element] PlaneTransformation Lens-APE Filter-APE ID (AnnotationID) PrimsRef PolarizationOpticsRef (choose one Children Entities (choose or Matrix AdditionalMirror TypeDescription KevWavelenght | PI PixelDwellTime FWHMBandwidth Value Settings ID (PolarizationOpticsID) PresetStepIncrement S{ TI FocalPositionZ Transmittance MagnificationChange ExcitationFilter F | Sp PlaneOffsetX FilterHolderPosition (was FilterWheel LensNA ID (MirrorID) OpticalApertureRef AnnotationRef Sa TheAdditionalDimensionRe ReflectanceRange ActualMountedAngle Row Description [Sub-Element] | Fd SpecimenInsertRef GenericLens D (OpticalApertureID) EmissionFilter ■ Composite FocusStabilizationDeviceRe CoatingMethod Technology **OpticalApertureRef** Geometry KeyWavelenght RefractiveIndex TransmittanceRange AttenuationCoefficient | FWHMBandwidth ttenuationCoefficient ID (OpticalApertureD) BeamExpanderLens NeutralDensityFilter Reflectance WorkingDistance ImageDistance ObjectDistance (deprecated: CutIn, CutOut, TheAdditional Cell CutInTolerance, CutOutTolerance) OpticalDeviceRef Children Entities (choose one Thickness Channel Dimension Transmittance AngleOfIncidence ontFocalLength CollimatorLens ID (OpticalDeviceID) Polarization CellValue Channel ➤ BackFocalLenght CameraSettings | KeyWavelenght AdditionalFilter TransmittanceProfile **TheAdditionalDimensionIndex** FWHMBandwidth Channel | PolarizationOpticsRe TheIncrementStamp RadiusOfCurvature CondenserLens TransmittanceRange LightPath ReadOutRate ID (PolarizationOpticsID) MaterialName MirroringDevice-APE Integration C| III| Name Children Entities (choose one) EX A Samples Per Pixel GlassCode (was Dichroic) PrismSettings FWHMBandwidth AmplificationGain CouplingLens | Et CollluminationType _____ Transmittance OffsetMode nnotationRef F|| Ex Acquisition Mode ✓ ID (PrismID) FrameRate AnnotationRef ______ C Er ContrastMethod ReflectingMirror PositionSetting ReflectanceRange OperatingTemperature | A| FI| ExcitationWavelength TransmittanceProfileFie RelayLens Prism C EmissionWavelength ReflectanceProfileFile PointDetectorSetting KeyWavelenght A Fluorophore (was Fluor) ReflectanceProfileFile FWHMBandwidth Color Diameter Reflectance AnnotationRef TubeLens Children Entities Beamsplitter PhotonCounting RadiusOfCurvature ID (DetetectorID) (choose one SubstrateType Transmittance _____ OilObjective TransmittanceProfileFile SubstrateMaterial Compound TransmissionAngle _____ StandardDichroic OpticalComponent Design PrismAngle OpticsHolderPosition Reflectance WavelengthRange LightPathMap ReflectanceProfileFile Position RefractiveIndex Reflectance PeakWavelength Dichroic-APE ID (OpticalComponentID) AdditionalDichroic Detector-APE AngleOfIncidence CutOn DeviationAngle CutOff (was Detector) AbbeNumber WavelenghtProfileFile MaterialName AttenuationCoefficient GlassCode AttenuationMethod Children Entities Density (additional attributes removed CoatingMethod (choose on AnnotationRef or moved to new Detector Settings Thickness or Laser Scanner classes) Polarization TransmittanceProfileFile PolarizationOptics AnalogVideo ReflectanceProfileFile MaxBitDepth QuantumEfficiency Function CrossPolarizer _____ CCD WavelengthRange ElectronConversionFactor _____ Children Entities (choose one ReadOutNoise BeamSplitter PeakWavelength DetectorNoiseModel RegisterWellCapacity IS-A- Camera-APE CutOff WavelenghtProfileFile DynamicRange AmbientOperatingTemperature Construction CMOS Fabrication Retardation Illumination ArrayWidth ArrayHeight PixelWidth PixelHeight ManufacturerOffset Color PixelWellCapacity MaximumFrameRate MaximumReadoutRate AmbientOperatingHumidity MaterialName GlassCode Intensified AnnotationRef SensorType IntensifierType WavelengthRange RegisterWellCapacity PeakWavelength CutOn CutOff Children entities (choose one WavelenghtProfileFile _____ PointDetector-APE PhotomultiplierTube 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 Units are omitted for simplicity sake. ______ APE, Abstract Parent Entity SignalProcessing CollectionEfficiency (in our case a Microscope and an image acquired using that instrument) are represented by three types of model elements: Coating ResponseTime DeadTime MultianodeChannelNr MultianodeArrangement AnnotationRef: This element always refers to a Comment/ 1) Entities = Boxes; 2) Relationships = lines connecting boxes; 3) Attributes = fields within boxes Annotation element as described for Channel. However for When describing a real life situation/thing: HeadOn 1)ENTITIES corresponds to NOUNS = the things we want to collect information about. simplicity sake most Comment/Annotation elements have <u>_____</u> PhotoDiode been omitted and the AnnotationRef has been inserted in 2) RELATIONSHIPS corresponds to VERBS = actions/state/occurrence that connect Entities with each other GenericDetector the referring element as an attribute. 3) ATTRIBUTES corresponds to ADJECTIVES = the actual information about each Entity we want to collect Avalanche PINJunction 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 MapAnnotation [Sub-Element] 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 For questions or comments please contact: HybridPhotoDetector caterina.strambio@umassmed.edu produced as part of a specific Experiment, was collected in a specific Imaging_Environment, was collected using specific Microscope_Settings etc.
