

# Supplementary Material

*Supplementary Table 3: OpenEP Electroanatomic Mapping Data Structure v1.0*

Field name	Description	Size
Userdata		
.systemName	Name of the clinical system that was used for collecting the clinical data	
.cartoFolder	Absolute path to the original directory in which a Carto dataset was unzipped.	
.velocityFolder	Absolute path to the original directory in which a Velocity dataset was unzipped.	
.precisionFolder	Absolute path to the original directory in which a Precision dataset was unzipped.	
.rhythmiaFolder	Absolute path to the original directory in which a Rhythmia dataset was unzipped.	
.electric		
.tags	The physician-visible names of the points applied during the clinical case.	n points x 1
.names	The internal names of the points used by the clinical electroanatomic mapping system	n points x 1
.electrodeNames_bip	The names of the electrode pair recording the bipole electrogram at each point	n points x 1
.egmX	The Cartesian co-ordinates of the mapping point	n points x 3
.egm	The recorded bipolar electrograms	n points x egm duration
.electrodeNames_uni	The names of the two unipole electrodes which make up the bipolar electrode pair at each mapping point.	n points x 2
.egmUniX	The Cartesian co-ordinates of the two unipole electrodes which make up the bipolar electrode pair at each mapping point.	n points x 3 x 2
.egmUni	The recorded unipolar electrograms	n points x egm duration x 2
.egmRef	The reference electrograms for each point	n points x egm duration
.ecg	The surface electrocardiogram for each point	n points x egm duration
.sampleFrequency	The sampling frequency of electrograms in the dataset	Integer (Hz)
.annotations		
.woi	The window of interest for each point relative to the reference annotation	n points x 2
.referenceAnnot	The reference annotation for each point with one value each for the start and end of the window	n points x 1

.mapAnnot	The local activation time annotation for each point relative to the reference annotation	n points x 1
.signalProps{1..m}	Sub-field to contain data relating to each of <i>m</i> clinical system-defined signal properties	m signal properties
.name	Name of the clinical-system derived signal property metric (for example CFAEMean)	n points x 1
.value	Value of the signal property for each of n points	n points x 1
.propSettings	String containing the user-defined settings used to create the clinical system-derived signal properties, for example "peak amplitude,X; temporal_spacing,Y"	Variable length string
.voltages		
.bipolar	The bipolar voltage measured by the clinical mapping system for each point	n points x 1
.unipolar	The unipolar voltage measured by the clinical mapping system for each point	n points x 1
.impedances		
.time	Cell array of time values for impedance traces for each point	1 x n points
.time{n}	Time values for impedance traces for point n	Impedance trace duration x 1
.value	Cell array of impedance values for for each point	1 x n points
.value{n}	Impedance values for point n	Impedance trace duration x 1
.egmSurfX	The Cartesian co-ordinates of the mapping point, projected to the closest point on the surface of the chamber	n points x 3
.barDirection	Surface normal for each mapping point	n points x 3
.notes	Cell array of notes relevant to the dataset	>=1 x n notes
.surface		
.triRep	A Trirep object	
.X	The Cartesian co-ordinates of the vertices in the surface mesh	n vertices x 3
.Triangulation	The vertex indices of each face in the surface mesh	n faces x 3
.isVertexAtRim	Logical array with true values indicating vertices that are on a free boundary	n vertices x 1
.act_bip	Local activation time data (column 1) and bipolar voltage data (column 2) from the clinical map	n vertices x 2
.uni_imp_frc	Unipolar voltage data (column 1), impedance data (column 2) and force data (column 3) from the clinical map	n vertices x 3
.signalMaps{1..n}	Sub-field to contain data relating to each of <i>m</i> clinical system-defined signal property maps	m signal property maps

	.name	Name of the clinical-system derived signal property map (for example CFAEMean)	Single string value
	.map	Value of the signal properties at every point	n points x 1
	.propSettings	String containing the user-defined settings used to create the clinical system-derived signal properties, for example "peak amplitude,X; temporal_spacing,Y"	Variable length string
.rf		Structure field to store manually acquired ablation site data	
	.originaldata		
	.force	Force data	
	.time	Ablation time data	n time intervals x 1
	.force	Contact force data	n time intervals x 1
	.axialangle	Axial angle	n time intervals x 1
	.lateralangle	Lateral angle	n time intervals x 2
	.position	Cartesian co-ordinates	n time intervals x 3
	.ablparams	Ablation data	
	.time	Ablation time data	n time intervals x 1
	.power	Power	n time intervals x 1
	.impedance	Impedance	n time intervals x 1
	.distaltemp	Temperature	n time intervals x 1
.rfindex		Structure field to store automatically acquired ablation site data	
	.name		
	.tag	Structure field to store ablation tag data from the Carto3 Visitag module	
	.X	Cartesian co-ordinates of each tag	n tag x 3
	.time	Time stamp of each tag	n tag x 1
	.avgForce	Average force applied at each tag	n tag x 1
	.maxTemp	Maximum recorded catheter tip temperature at each tag	n tag x 1
	.maxPower	Maximum applied radiofrequency power at each tag	n tag x 1
	.Impedance		
	.baseImp	Baseline impedance, in Ohms, recorded at each tag	n tag x 1
	.impDrop	Impedance drop, in Ohms, recorded at each tag	n tag x 1
	.fti	Force time integral calculated at each tag	n tag x 1
	.index		
	.name	Proprietary name of the calculated radiofrequency index	String
	.value	Value of the proprietary radiofrequency index	n tag x 1
	.grid	Structure field to store grid data from the Carto3 Visitag module	n tag x 1 cell array

		containing m grid point x 1 array 1 x 3 array
.X	Cartesian co-ordinates of this grid point in the ablation dataset [X, Y, Z]	
.time	Timeseries for this grid point	n time intervals x 1
.index		
.name	Proprietary name of the calculated radiofrequency index	String
.value	Timeseries of the proprietary radiofrequency index	n time intervals x 1
.impedance	Impedance timeseries for this grid point, Ohms	n time intervals x 1
.temperature	Temperature timeseries for this grid point, C	n time intervals x 1
.power	Power timeseries for this grid point, W	n time intervals x 1
.impedanceDrop	Impedance drop timeseries for this grid point, Ohms	n time intervals x 1
.force	Force timeseries for this grid point, g	n time intervals x 1