Si Data Format (Matlab)

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For example (for 4.4.0 and newer): to load x,y,z coordinates of PSMs through time into arrays, first load a _SI.mat into Matlab, then do:

```
temp = [dOUT.data];
pose = [temp(:).Pose_PSM];
xyz_psm1 = pose([4,8,12],   :);
xyz_psm2 = pose([4,8,12]+12,:);
xyz_psm3 = pose([4,8,12]+24,:);
```

_EVT.mat: a struct array dOUT where each element is a time frame: e.g. the 1234th time frame is: dOUT(1234)=

New (ISSI 4.4.0 and newer)

header

size: int32, e.g. 93
tag: uint32, e.g. 697
timestamp: double, e.g. 1.46E12 ← relative time (ms)
type: int32, e.g. 1004

data

Timestamp: double, e.g. 1.603E06 ← do not use*
sysId: [16x1 char]
mid: int32, e.g. 11
event_id: int32, e.g. 6
args: [4x1 **int32**], e.g. [420179,15,160222394,524334], where 1st arg is instrument ID

_SSC.mat: e.g. the 1234th time frame is: dOUT(1234)=

New (ISSI 4.4.0 and newer)

header

size: int32, e.g. 449
tag: uint32, e.g. 80794
timestamp: double, e.g. 1.4624e+12 ← relative time (ms)
type: int32, e.g. 1004

data

Timestamp: double, e.g. 1.6011e+06 ← do not use*
JointAngles_MTM: [32x1 single] ← [1L; 1R; 2L; 2R]. Four length-8 vectors for 8 active joints per MTM (no setup joints).
Pose_Grip: [4x1 single] ← [1L; 1R; 2L; 2R]
Pose_MTM: [48x1 single] ← [1L; 1R; 2L; 2R]. x,y,z in indices 4,8,12 of length-12 vector. Eye reference frame
Pose_TwistAngle: [4x1 single] ← [1L; 1R; 2L; 2R]

_SI.mat: e.g. the 1234th time frame is: dOUT(1234)=

New (ISSI 4.4.0 and newer)

header

size: int32, e.g. 1014
tag: uint32, e.g. 80794
timestamp: double, e.g. 1.4624e+12 ← relative time (ms)
type: int32, e.g. 1000

data

Timestamp: double, e.g. 1.6011e+06 ← do not use*
JointAngles_ECM: [8x1 single] ← 1+3 setup joints, 4 active joints
JointAngles_PSM1: [11x1 single] ← 1+3 setup joints, 7 active joints
JointAngles_PSM2: [11x1 single] ← 1+3 setup joints, 7 active joints
JointAngles_PSM3: [12x1 single] ← 1+4 setup joints, 7 active joints
Pose_Base: [3x1 single] ← usually all 0
Pose_ECM: [12x1 single] ← x,y,z in indices 4,8,12. ECM RCM ref frame.
Pose_PSM: [36x1 single] ← [PSM1; PSM2; PSM3]. x,y,z in indices 4,8,12. ECM Tip ref frame.
Pose_RCM: [48x1 single] ← [PSM1~3; ECM], PSMs in ECM Tip ref frame, ECM in Base frame.
Pose_Mount: [48x1 single] ← usually remains constant
Pose_Workplace: [12x1 single] ← usually all 0

*** Use timestamp of .header whenever possible as Timestamp of .data may not be correct.**