



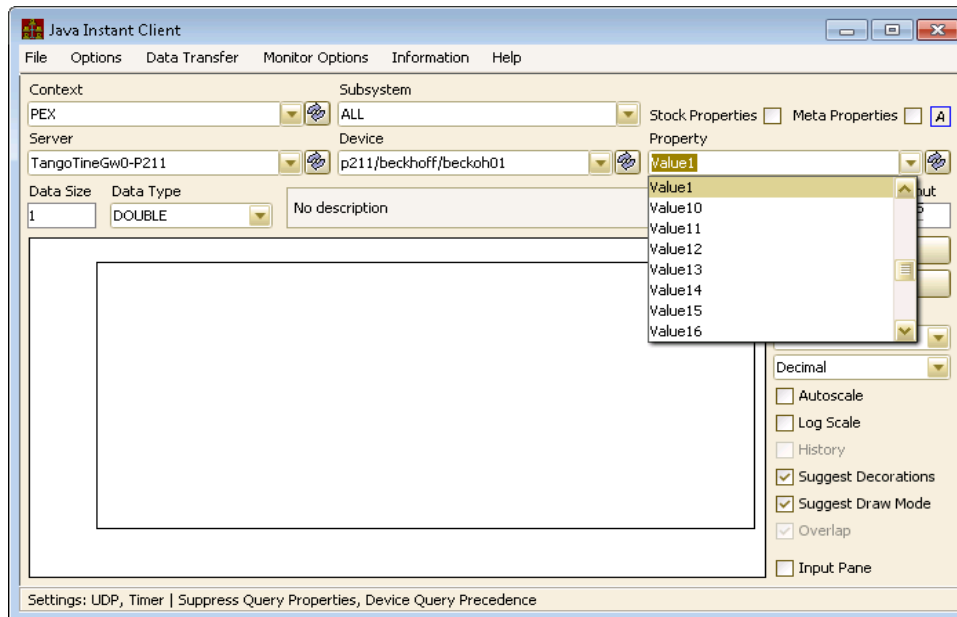
# TINE Combobulator

A configurable middle layer ...

# Combobulator

## ■ The problem

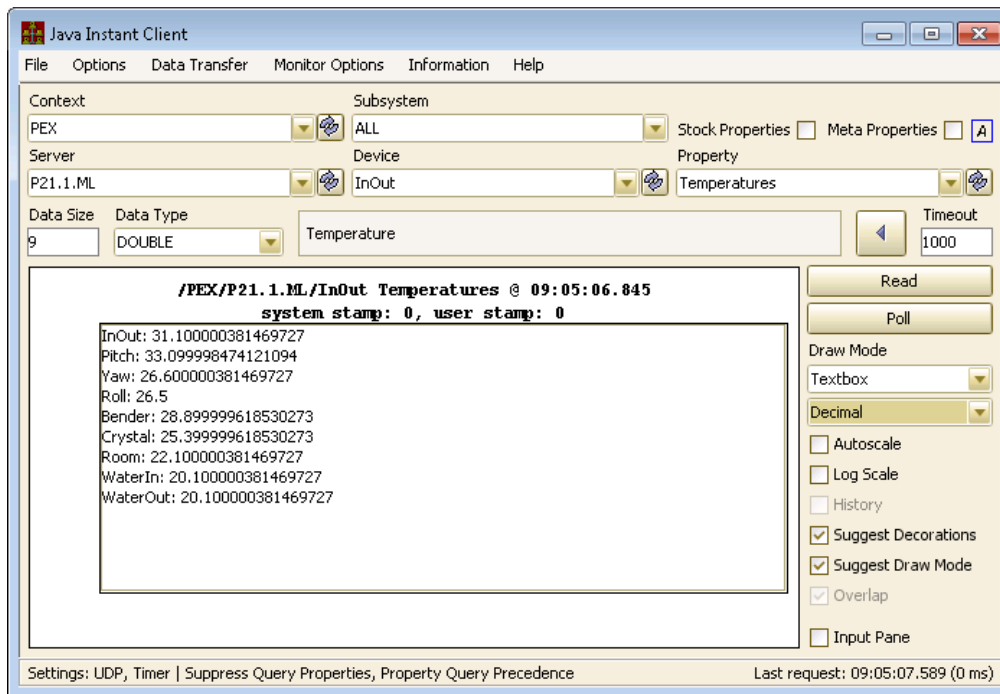
- due to whatever reasons (topology, established conventions, mindset, ...) :
  - the exported property and device set and data are *sub-optimal* for systematic use
  - Need a middle layer to straighten things out



**Request:**  
**Archive 'Value1' ->**  
**'Value10' as some set**  
**of keywords ...**

# Combobulator

- But :
  - Property names not very descriptive
  - most of values to be archived describe a multi-channel array
    - Avoid entering N almost identical keywords in the archiver when 1 will do ! (and the archive requester wanted this anyway!)

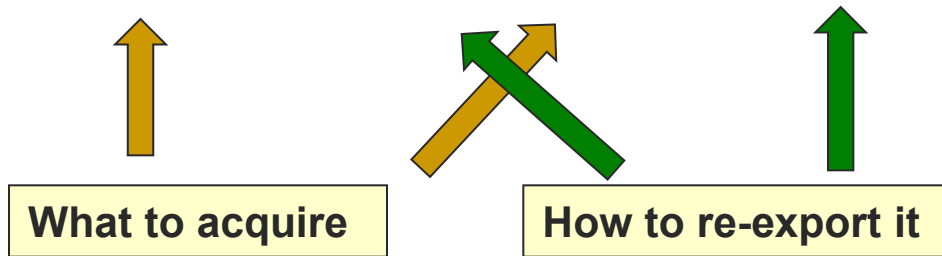


**Easier to deal with in the archiver and other clients ...**

# [ Combobulator ]

- Combobulator reads a config database and does this!  
(sometimes a single .csv file)

SERVER	PROPERTY	PROPERTY_ALIAS	DEVICE	DEVICE_ALIAS	FORMAT	CAPACITY	DESCRIPTION	SHIFT	SCALE	INTERVAL
/PEX/TangoTineGw0-P211	Value1	Temperatures	p211/beckhoff/beckoh01	InOut	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value2	Temperatures	p211/beckhoff/beckoh01	Pitch	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value3	Temperatures	p211/beckhoff/beckoh01	Yaw	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value4	Temperatures	p211/beckhoff/beckoh01	Roll	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value5	Temperatures	p211/beckhoff/beckoh01	Bender	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value7	Temperatures	p211/beckhoff/beckoh01	Crystal	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value8	Temperatures	p211/beckhoff/beckoh01	Room	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value9	Temperatures	p211/beckhoff/beckoh01	WaterIn	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value10	Temperatures	p211/beckhoff/beckoh01	WaterOut	double	1	[0:100 'C]Temperature	0	1	1000
/PEX/TangoTineGw0-P211	Value13	Flow	p211/beckhoff/beckoh01	Water	double	1	[0:100 l/s]Water Flow	0	1	1000



# [ Combobulator ]

- A pre-built server !
- Another TINE tool (like the Repeater)
  - *but as yet:*
    - no config database manager
    - no documentation per se  
(but that is easily remedied)
  - Not limited to MCA combobulation !
  - Can also repeat/forward commands !
- > 20 combobulators now in service ...

# Combobulator (examples)

Java Instant Client

File Options Data Transfer Monitor Options Information Help

Context: FLASH Subsystem: ALL Stock Properties  Meta Properties  A

Server: ComBobFla2PP Device: NOPA\_preamp Property: PulseEnergy.Mean

Data Size: 11 Data Type: FLOAT Timeout: 1000

Pulse Energy Mean (in Burst)

Read Poll

Draw Mode: Textbox

Decimal: Decimal

Autoscale  Log Scale  History

```

/FLASH/ComBobFla2PP/NOPA_preamp PulseEnergy.Mean @ 09:27:44.937
system stamp: 0, user stamp: 0
NOPA_preamp: 364.8487
OPCPA50k_SHG: 0.12283699
OPCPA50k_stage1: 73.61099
OPCPA_output: 364.1537
PB1_PD5.5b: 10.278476
PB2A_IN: 109.22051
PB2A_OUT: 3.7073016
PB2B_IN: 0.0
PB2B_OUT: 0.0
FL26_IN: 0.0
    
```

Java Instant Client

File Options Data Transfer Monitor Options Information Help

Context: PETRA Subsystem: ALL Stock Properties  Meta Properties  A

Server: BeamQuality Device: Sector N1 Property: BeamAngleXQuality

Data Size: 15 Data Type: DOUBLE Timeout: Beam Angle Delta

Read Poll

Draw Mode: Textbox

Decimal: Decimal

Autoscale  Log Scale  History

```

/PETRA/BeamQuality/Sector N1 BeamAngleXQuality @ 09:29:05
system stamp: 1226787318, user stamp: 0
Sector N1: 96.33777773871404
Sector N2: 98.98666665585779
Sector 1: 99.92185465914766
Sector 2: 97.65938216514442
Sector 3: 99.68342287029931
Sector 4: 96.25884854264886
Sector 5: 98.7720644666155
Sector 6: 99.98081460791101
Sector 7: 99.64216441625098
Sector 8: 99.040730395551
    
```

Java Instant Client

File Options Data Transfer Monitor Options Information Help

Context: MVS Subsystem: ALL Stock Properties  Meta Properties  A

Server: ComBobMS Device: MS01 Property: MassSpec.Scan.EM

Data Size: 100 Data Type: FLOAT Timeout: 1000

Mass Spectrometer Emission Current

Read Poll

Draw Mode: Textbox

Decimal: Decimal

Autoscale  Log Scale  History

Suggest Decorations  Suggest Draw Mode  Overlap  Input Pane

```

/MVS/ComBobMS/MS01 MassSpec.Scan.EM @ 12:43:21.993
system stamp: 0, user stamp: 0
MS01: 0.0125
MS02: 0.0075
MS03: 0.0025
MS04: 0.0025
MS05: 0.0025
MS06: 0.0025
MS07: 0.0
MS08: 0.0
MS09: -1.0
MS10: 0.0025
MS11: 0.0025
MS12: 2.005
MS13: 0.0025
    
```

Settings: UDP, Timer | Suppress Query Properties, Property Query Precedence Last request: 12:43:22.10 (0 ms)

Java Instant Client

File Options Data Transfer Monitor Options Information Help

Context: XFEL Subsystem: ALL Stock Properties  Meta Properties  A

Server: MODS.HPRF Device: GUN.I1 Property: Kly\_voltage

Data Size: 2000 Data Type: FLOAT Timeout: 1000

Read Poll

Draw Mode: PolyLine

Decimal: Decimal

Autoscale  Log Scale  History

Suggest Decorations  Suggest Draw Mode  Overlap  Input Pane

```

/XFEL/MODS.HPRF/GUN.I1 Kly_voltage @ 09:33:59.147
system stamp: 139...
    
```

Settings: UDP, Timer | Suppress Query Properties, Property Query Precedence Last request: 09:33:59.147 (0 ms)

# Combobulator

- Source information :

The screenshot shows the Java Instant Client window with the following configuration and data:

- Context:** XFEL, Subsystem: ALL
- Server:** MODS.HPRF, Device: GUN.I1, Property: Kly\_Voltage.Sample.SRC
- Data Size:** 26, **Data Type:** NAME64, **Timeout:** 1000
- Channel Sources:** channel sources

The main display area shows the following source information:

```
/XFEL/MODS.HPRF/GUN.I1 Kly_Voltage.Sample.SRC @ 09:44:18.398  
system stamp: 139128472, user stamp: 0  
GUN.I1: /XFEL/MOD01.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A1.I1: /XFEL/MOD02.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A2.L1: /XFEL/MOD03.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A3.L1: /XFEL/MOD04.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A4.L1: /XFEL/MOD05.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A5.L1: /XFEL/MOD06.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A6.L3: /XFEL/MOD07.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A7.L3: /XFEL/MOD08.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A8.L3: /XFEL/MOD09.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A9.L3: /XFEL/MOD10.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A10.L3: /XFEL/MOD11.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A11.L3: /XFEL/MOD12.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]  
A12.L3: /XFEL/MOD13.FAST_CHANNEL/device0[SCID_VOLT_KLY_ACT]
```

Additional controls on the right include Read, Poll, Draw Mode (Textbox), Decimal, Autoscale, Log Scale, History, Suggest Decorations, Suggest Draw Mode, Overlap, and Input Pane.

Settings: UDP, Timer | Suppress Query Properties, Property Query Precedence  
Last request: 09:44:18.274 (0 ms)

# Combobulator

## ■ Connection Quality statistics :

The screenshot shows the Java Instant Client window with the following configuration:

- Context: XFEL
- Subsystem: ALL
- Server: MODS.HPRF
- Device: GUN.I1
- Property: Kly\_Voltage.CQS
- Data Size: 26
- Data Type: ADDRESS
- Channel connection quality stats: channel connection quality stats

The main display area shows the following data:

```
/XFEL/MODS.HPRF/GUN.I1 Kly_Voltage.CQS @ 09:35:52.710  
system stamp: 139123417, user stamp: 0  
GUN.I1: [0, 24155, 99, 1]  
A1.I1: [0, 0, 100, 1]  
A2.L1: [0, 1, 85, 1]  
A3.L1: [0, 2, 100, 1]  
A4.L1: [0, 1, 100, 1]  
A5.L1: [0, 1, 101, 1]  
A6.L3: [0, 2, 100, 1]  
A7.L3: [187, 4, 100, 1]  
A8.L3: [0, 1, 84, 1]  
A9.L3: [696, 10, 110, 1]  
A10.L3: [0, 1, 101, 1]  
A11.L3: [0, 5, 86, 1]  
A12.L3: [0, 1, 99, 1]
```

Settings: UDP, Timer | Suppress Query Properties, Property Query Precedence  
Last request: 09:35:52.606 (0 ms)

### Fields in the Int-4-tuple:

- Timeouts
- Callback misses/skips
- Delta timestamp
- Delta systemstamp



# Combobulator.csv (example)

SERVER	PROPERTY	DEVICE	DEVICE_ALIAS	DESCRIPTION	FORMAT	CAPACITY	OPTIONS
/XFEL/MOD01.DUMMIES	Mod-Dummies.csv	device0	GUN.I1	Mod for Kryo	single	30	
/XFEL/MOD02.DUMMIES	Mod-Dummies.csv	device0	A1.L1	Mod for Kryo	single	30	
/XFEL/MOD03.DUMMIES	Mod-Dummies.csv	device0	A2.L1	Mod for Kryo	single	30	
/XFEL/MOD04.DUMMIES	Mod-Dummies.csv	device0	A3.L1	Mod for Kryo	single	30	
/XFEL/MOD05.DUMMIES	Mod-Dummies.csv	device0	A4.L1	Mod for Kryo	single	30	
/XFEL/MOD06.DUMMIES	Mod-Dummies.csv	device0	A5.L1	Mod for Kryo	single	30	
/XFEL/MOD07.DUMMIES	Mod-Dummies.csv	device0	A6.L3	Mod for Kryo	single	30	
/XFEL/MOD08.DUMMIES	Mod-Dummies.csv	device0	A7.L3	Mod for Kryo	single	30	
/XFEL/MOD09.DUMMIES	Mod-Dummies.csv	device0	A8.L3	Mod for Kryo	single	30	
/XFEL/MOD10.DUMMIES	Mod-Dummies.csv	device0	A9.L3	Mod for Kryo	single	30	
/XFEL/MOD11.DUMMIES	Mod-Dummies.csv	device0	A10.L3	Mod for Kryo	single	30	
/XFEL/MOD12.DUMMIES	Mod-Dummies.csv	device0	A11.L3	Mod for Kryo	single	30	
/XFEL/MOD13.DUMMIES	Mod-Dummies.csv	device0	A12.L3	Mod for Kryo	single	30	
/XFEL/MOD14.DUMMIES	Mod-Dummies.csv	device0	A13.L3	Mod for Kryo	single	30	
/XFEL/MOD15.DUMMIES	Mod-Dummies.csv	device0	A14.L3	Mod for Kryo	single	30	
/XFEL/MOD16.DUMMIES	Mod-Dummies.csv	device0	A15.L3	Mod for Kryo	single	30	
/XFEL/MOD17.DUMMIES	Mod-Dummies.csv	device0	A16.L3	Mod for Kryo	single	30	
/XFEL/MOD18.DUMMIES	Mod-Dummies.csv	device0	A17.L3	Mod for Kryo	single	30	
/XFEL/MOD19.DUMMIES	Mod-Dummies.csv	device0	A18.L3	Mod for Kryo	single	30	
/XFEL/MOD20.DUMMIES	Mod-Dummies.csv	device0	A19.L3	Mod for Kryo	single	30	
/XFEL/MOD21.DUMMIES	Mod-Dummies.csv	device0	A20.L3	Mod for Kryo	single	30	
/XFEL/MOD22.DUMMIES	Mod-Dummies.csv	device0	A21.L3	Mod for Kryo	single	30	
/XFEL/MOD23.DUMMIES	Mod-Dummies.csv	device0	A22.L3	Mod for Kryo	single	30	
/XFEL/MOD24.DUMMIES	Mod-Dummies.csv	device0	A23.L3	Mod for Kryo	single	30	
/XFEL/MOD25.DUMMIES	Mod-Dummies.csv	device0	A24.L3	Mod for Kryo	single	30	
/XFEL/MOD26.DUMMIES	Mod-Dummies.csv	device0	A25.L3	Mod for Kryo	single	30	
/XFEL/MOD01.FAST_CHANNEL	Mod-FastChannelTr	device0	GUN.I1	Mod for Kryo	single.SPECTRUM	2000	SCHEDULE   MONOTONIC
/XFEL/MOD02.FAST_CHANNEL	Mod-FastChannelTr	device0	A1.I1	Mod for Kryo	single.SPECTRUM	2000	SCHEDULE   MONOTONIC
/XFEL/MOD03.FAST_CHANNEL	Mod-FastChannelTr	device0	A2.L1	Mod for Kryo	single.SPECTRUM	2000	SCHEDULE   MONOTONIC
/XFEL/MOD04.FAST_CHANNEL	Mod-FastChannelTr	device0	A3.L1	Mod for Kryo	single.SPECTRUM	2000	SCHEDULE   MONOTONIC

Can supply a property list !

SPECTRUM array type => not an MCA

Specific options

# Combobulat

■ Demo ...

