

# PYTINE 3.4

June 8, 2015

# TINE and Python

- ▣ Python :
  - widely used
  - large community with lots of libraries (scientific, graphic)
  - Open source (it's free!)
- ▣ PyTine : EMBL ~2007 (stopped at Python 2.7)
  - Simple client-side interface
    - ▣ Asynchronous links and callbacks !
  - Only the 'basic' data type supported
  - Last version only for Linux.
- ▣ Current State:
  - Full-blown client and server interface
  - Uses Python 3.4
  - Windows, Linux, and Mac supported.

# TINE and Python

- ▣ PyTine
  - Makes use of the tine core library + the buffered server library and listener utilities
  - A la 'LabView', 'MatLab', IDL, (or just plain C, C++).
  - The API is already 'easy'.
- ▣ Command line
  - Non GUI Python scripts at the command line
  - Debugging tools available.
- ▣ PyQt
  - Use PyQt for GUI applications
  - Caveat: Do NOT access GUI widgets inside callbacks!  
(Send signals instead ...)

# TINE and Python

## ▣ PyQt callback paradigm:

```
import pyqtgraph as pg
import pyqtgraph.exporters
from pyqtgraph.Qt import QtCore, QtGui

from PyQt4.QtCore import QObject, pyqtSignal, pyqtSlot

import os
import threading
import ctypes as C
import numpy as np

import PyTine as tine
import time

class Update(QObject):
    update = pyqtSignal();
    def __init__(self):
        QObject.__init__(self);
    def do_update(self):
        self.update.emit();
```

```
@pyqtSlot()
def on_update():
    pl.setData(y=yd, x=xd);

upd = Update();
upd.update.connect(on_update);

xd = np.arange(0,32768);
yd = np.arange(0,32768);

def ptrain_cb(a,b,c):
    global yd
    yd = c['data'][0:32768];
    upd.update.emit();
```

# TINE and Python

**TINE (Three-fold Integrated Networking Environment)**

pronounced: TEE-NEH

**Note:**  
(TINE++ % 4) = INET and Remember: *This Is Not Epics!*  
But you can run EPICS iocs on TINE using Epics2Tine.  
TINE is embedded in DOOCS, so you can also run DOOCS clients and servers using TINE.  
TINE can also be used in a STARS system and via a STARS-bridge in a COACK system.  
You can also include TANGO elements on your TINE system using Tango2Tine.  
But you might want to go native ...

Current Release level: 4.5.5

General	APIs	Services	Examples & Help	Workshops & Tutorials	Low Level Support
Bird's Eye View	C API	Alarm System	Getting Started	TINE Workshop 2007	Network Queue
Overview	EZ API/Buffered API	Archive System	TINE Server Wizard	Quick Tutorial (Windows)	Common Device Interface (CDI)
Features	Java API	Post Mortem/Event Archive System	Console Server (C)	Quick Tutorial (UNIX/Linux)	TINE CanOpen Manager (TICOM)
Configuration	.NET API (C#)	State Server	Console Client (C)	Workshop Tutorial (Buffered Server)	
Data Types	Visual Basic 6 (legacy) API	Name Server	GUI Server (VB)	Workshop Tutorial (Standard Server)	
Transfer Modes	LabView API	Remote Debugging Tools	GUI Client (VB)	Workshop Tutorial (Clients)	
Access Flags	MatLab API	Network Globals	Console Client (Java)	CDI Tutorial	
Array Types	XCOMM Matlab API	Time Synchronization	GUI Client (Java)		
Time Stamps	Python 3.4 API	Security	Console Server (Java)	TINE Users Meeting	
Naming Conventions	CDI Native API	Netmex	Trouble Shooting	TINE Presentations	
Data Flow Tips		Command Line	Application Demos		
Stock Properties	error codes	Video System			
Meta Properties		TINE Repeater			
		TINE Scope Servers			
		TINE Motor Servers			

TINE web client applications can be ea  
TINE is fully supported by ACOP (click  
You may want to have a look at the release notes for version 4.00 or take a quick look at a Bird's Eye View of TINE.  
Download TINE here.  
Questions or comments can be addressed to [tine@desy.de](mailto:tine@desy.de)  
Bug Reports can be submitted to the [tine tracker](#).  
General discussion or questions can be submitted to the [tine forum](#).  
Note: Due to an ever increasing amount of 'forum spamming' you will need to send a separate email to [tine@desy.de](mailto:tine@desy.de) requesting a forum account if you wish to actively participate.

<http://adweb.desy.de/mcs/tine/tinePythonAPI.html>

# TINE and Python

- ▣ Time for a demo ....