Sherpa is the Chandra Interactive Analysis of Observations (CIAO) modeling and fitting application. Written in Python, with efficient C, C++, and Fortran extensions, Sherpa enables the user to construct complex models from simple definitions and fit those models to data, using a variety of statistics and optimization methods.

Sherpa is a general-purpose fitting engine with advanced capabilities, and has been used as a backend for the development of new applications like Iris, the Virtual Astronomical Observatory spectral energy distribution builder and analyzer. However, building and installing Sherpa as a standalone Python package was problematic, and such a build would not maintain all of the Sherpa capabilities.

For version 4.7 Sherpa's build scripts have been completely rewritten, standardized, and made independent of CIAO, so that Sherpa can now be built as a fully functional standalone Python package, and yet allow users the flexibility they need in order to build Sherpa in customized environments.

Customized source build options example:
- Link Sherpa’s Python extensions against local libraries, e.g. FFTW
- Enable XSPEC extension for X-Ray specific models (HEASARC)

Sherpa can be seamlessly integrated with other Python tools and packages.

In the example on the right, Sherpa is used alongside Astropy to perform a simple fit in an IPython Notebook.

Note how Sherpa’s plot_fit() function can be used to produce an inline matplotlib plot.

Sherpa supports PyFITS and Matplotlib as FITS and plotting backends, as well as Crates and ChiPS, which are the native CIAO packages for FITS I/O and plotting.

Sherpa can be easily installed with:
1. python setup.py install
2. pip install [-pre] sherpa
3. conda install sherpa
4. bash sherpa-...-installer.sh

The CXC channel currently needs to be added with:
$ conda config --add https://conda.binstar.org/cxc

Sherpa is available in source and binary form and can be easily installed with:
1. setuptools, using the source distribution
2. pip, as Sherpa is registered in PyPI
3. conda, from an Anaconda installation
4. standalone installer

The figure on the left shows the output of the standalone installer.

Beta Binaries can be downloaded from:
http://cxc.cfa.harvard.edu/contrib/sherpa47b
(or scan the QR Code on the right).

Production-ready binaries and full documentation for the source builds will be released with CIAO 4.7 in December 2014.