Software Design

Requirements

<table>
<thead>
<tr>
<th>Hardware Control</th>
<th>Powerful Data Processing</th>
<th>Rapid Prototyping</th>
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<tr>
<td>• Wide-ranging support</td>
<td>• High performance system and algorithms</td>
<td>• Fully-functional GUI</td>
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<td>• Easily extendable</td>
<td>• Use well-known and tested 3rd party numerical libraries</td>
<td>• Flexible GUI design</td>
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<td>• Real-time capability</td>
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<td>• Support of runtime scripting</td>
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Solutions

Core-Application
- C++, Qt-framework, platform independent
- Multi-Threading
- OpenCV based data structures

Plugin System
- Hardware-Plugins (cameras, actuators, I/O)
- Fast, complex algorithms

Python Scripting
- Embedded Python 3 scripting language
- Development support (Debugging)
- Many 3rd party packages available (NumPy, Scipy...)

Qt-based GUI Design
- WYSIWYG design tool
- Connectivity to Python scripts

Exemplary Application: Fringe Projection Microscope

Hardware Plugins
- Camera control
- OpenGL based pattern projection using an LCOS
- Actuator control

Software Plugins
- Fast phase reconstruction and unwrapping in C++

GUls
- Configuration dialogs
- Adapted live image window for easy sensor adjustment
- 2D and 3D plots for result visualization

Python Scripting
- High level measurement process
- Calibration
- Data storage and visualization

Licensing, Binaries and Sources

Licensing
- **itom** (core application) is open source (LGPL).
- **itom SDK** contains common resources of core application and plugins. Its license is LGPL + **itom-Exception**. This exception allows the usage and linkage of the **itom SDK** in any plugin independent on its proper license.
- Plugins can be subject to any (including proprietary) license.

More information about **itom**
- [www.uni-stuttgart.de/ito/itom](https://www.uni-stuttgart.de/ito/itom)
- [itom.bitbucket.org](https://bitbucket.org/itom)

Windows 32/64bit setups and sources
- [https://bitbucket.org/itom](https://bitbucket.org/itom)