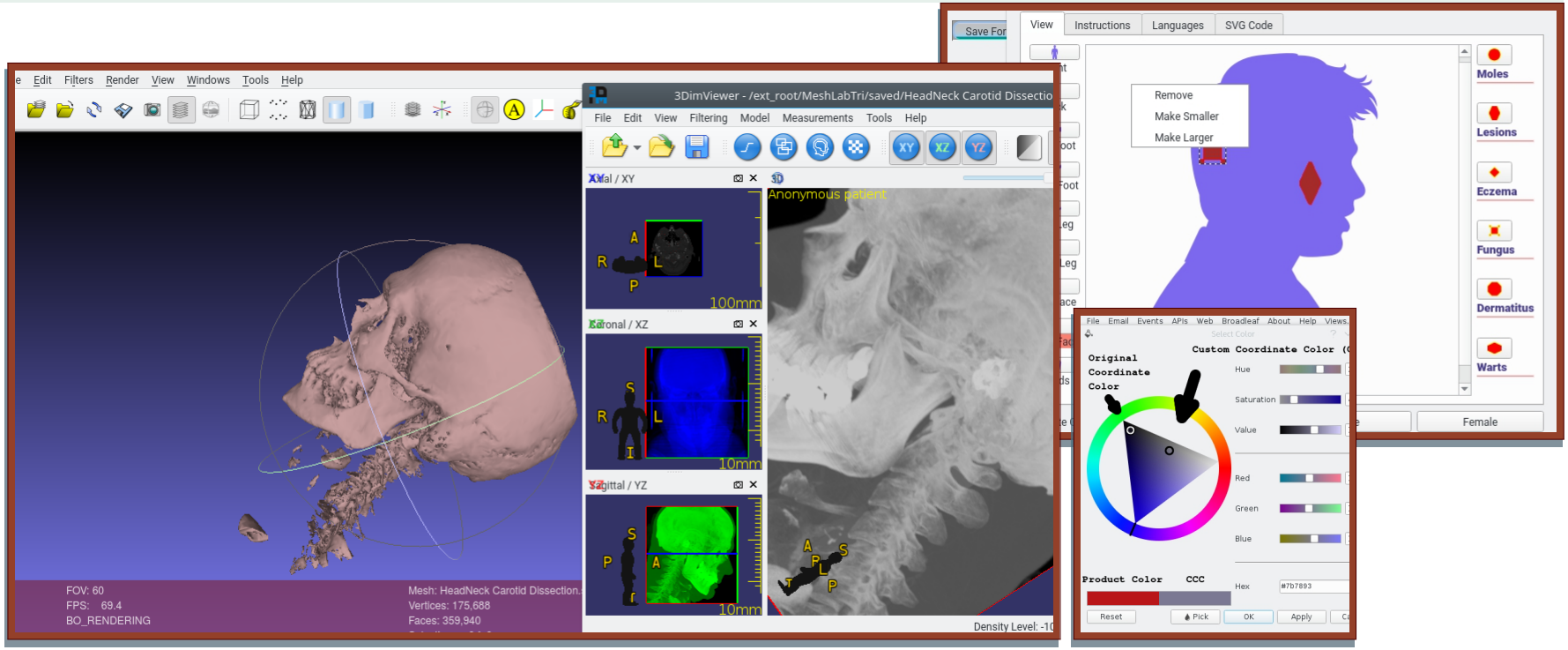
A New Image-Annotation Framework

AXFi ("Annotation Exchange Format for Images")

Annotation Serialization • Application Plugins • Imaging GUI Components



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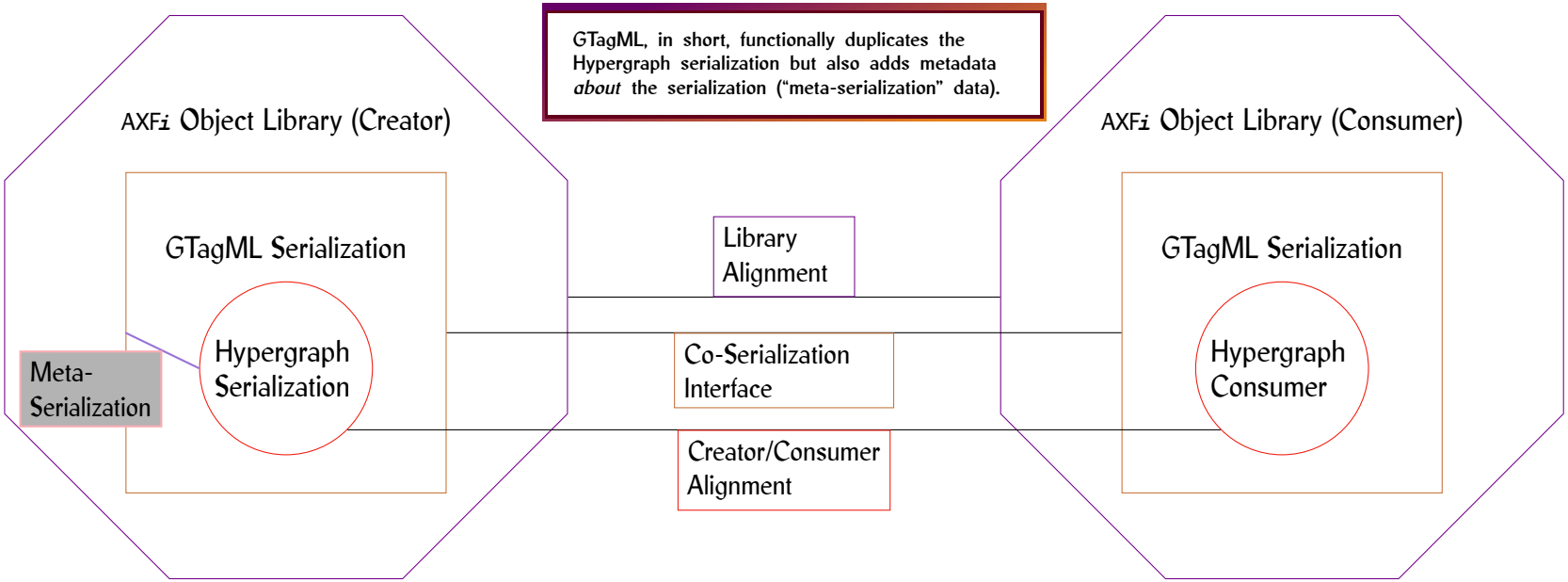
GTagML ("Grounded" TagML) and Hypergraph Exchange Format

Creator/Consumer Alignment between applications is enforced first by an object-sharing protocol using Hypergraph-based serialization and followed by GTagML serialization.

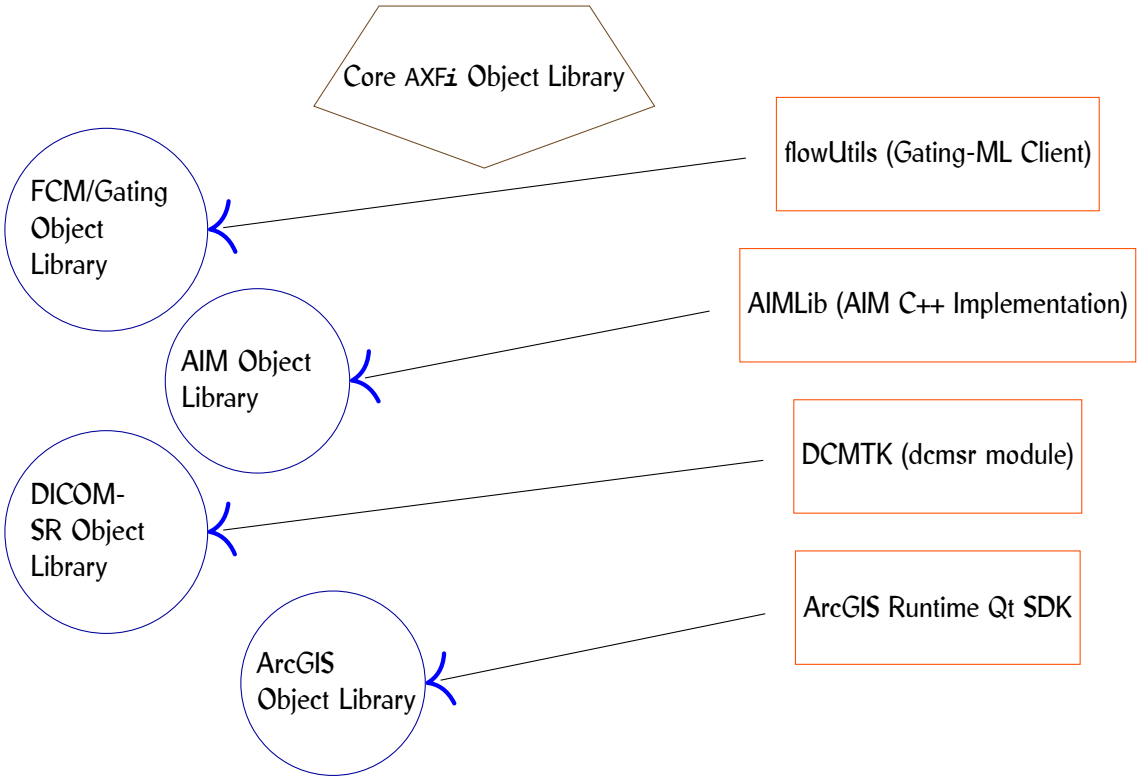
GTagML includes metadata identifying how GTagML nodes relate to data types, object instances, and procedures implemented in the Object Libraries.

GTagML, in short, functionally duplicates the Hypergraph serialization but also adds metadata *about* the serialization ("meta-serialization" data).



AXFi Extended Object Libraries

AXFi extensions for domains such as Flow Cytometry, DICOM, and Geographic Information Systems leverage the GTagML/Hypergraph model while functionally emulating existing "reference" libraries.

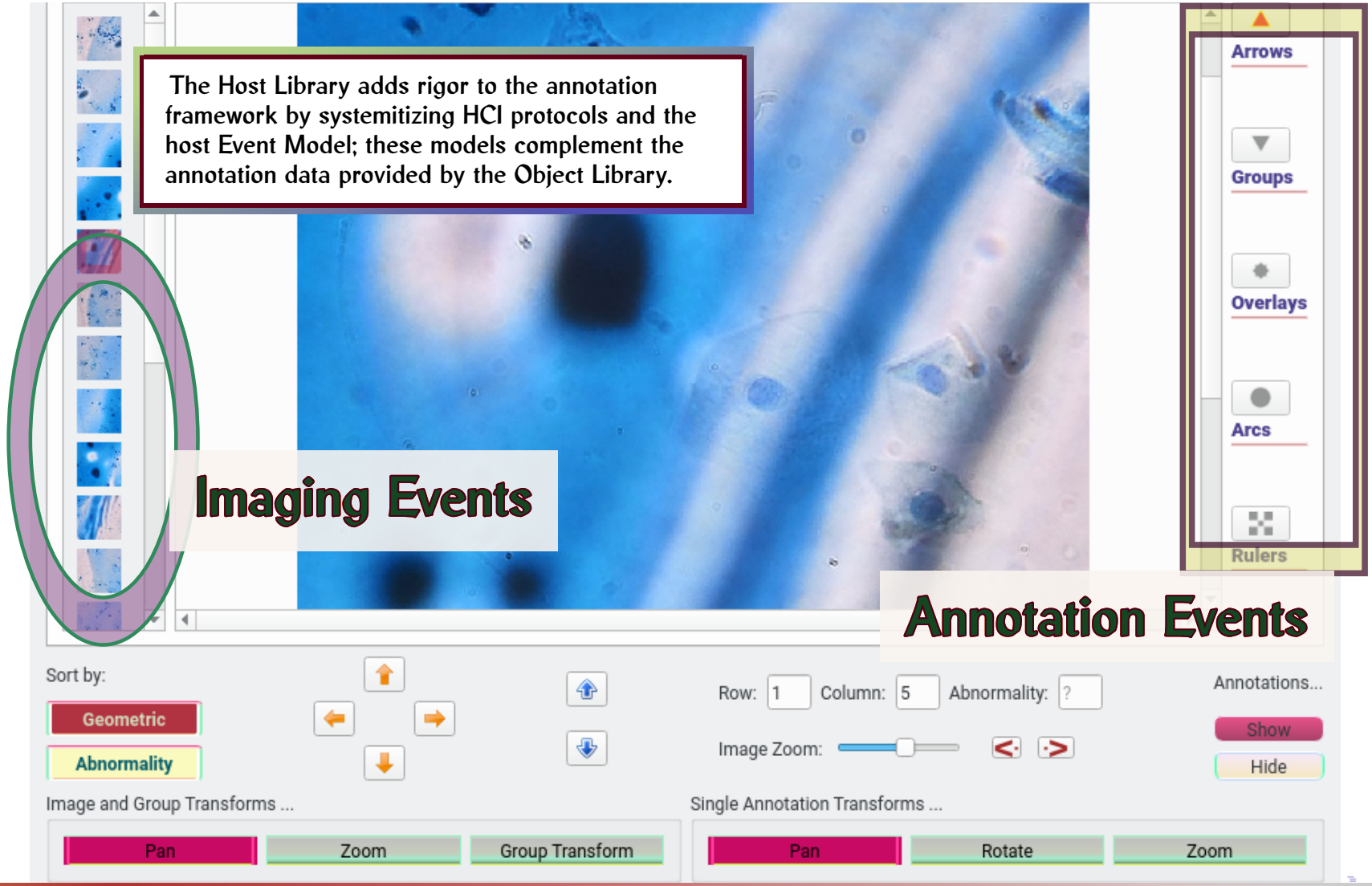


For AXFi extensions, the protocol would be to establish a functional equivalence (for maximum adaptability) among Hypergraph serialization, GTagML serialization, and Reference Implementations for markup formats providing the extended semantics being added to AXFi.

AXFi Host Libraries and Application Integration

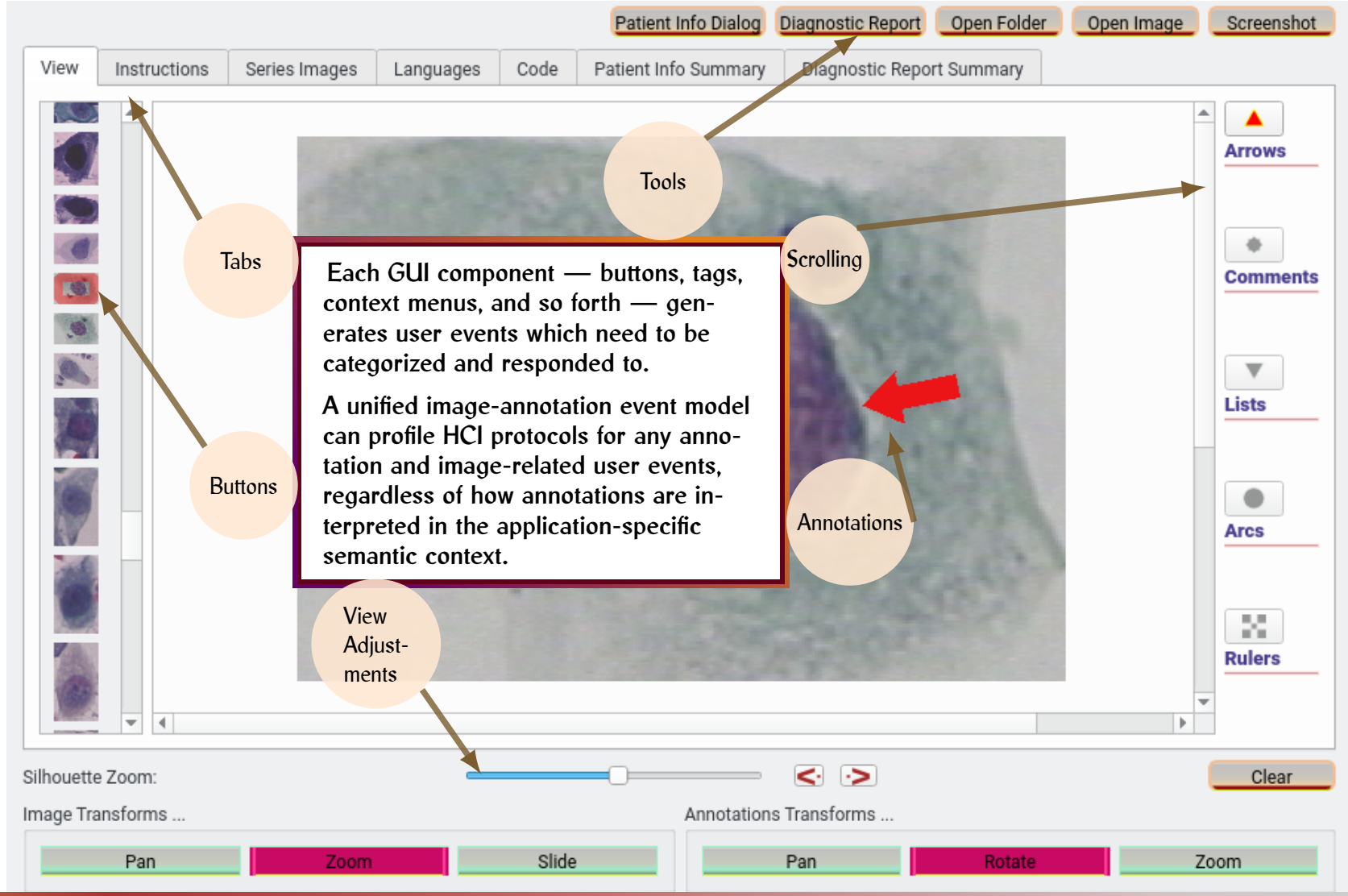
Complementary to AXFi Object Libraries, AXFi Host Libraries bridge Object Libraries with the applications where they are embedded.

The Host Library therefore shares computational resources with both the Co-Serialization Interface and the host GUI code.



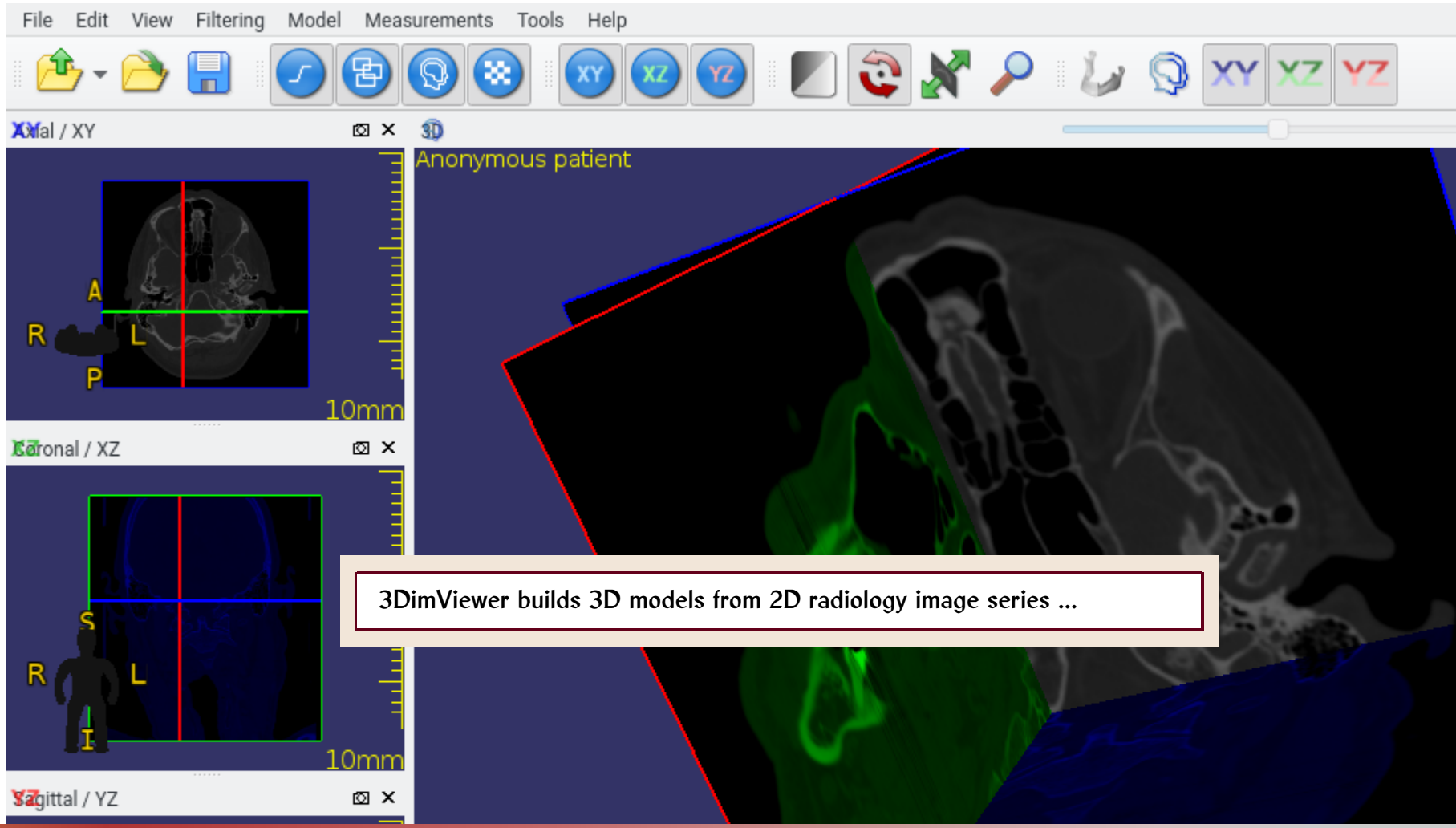
Toward a Unified Event Model

One benefit of merging image-annotation frameworks is that, while the semantic and geometric meaning of annotations varies across scientific fields, HCI protocols (as annotations are viewed and manipulated by users) are largely the same.



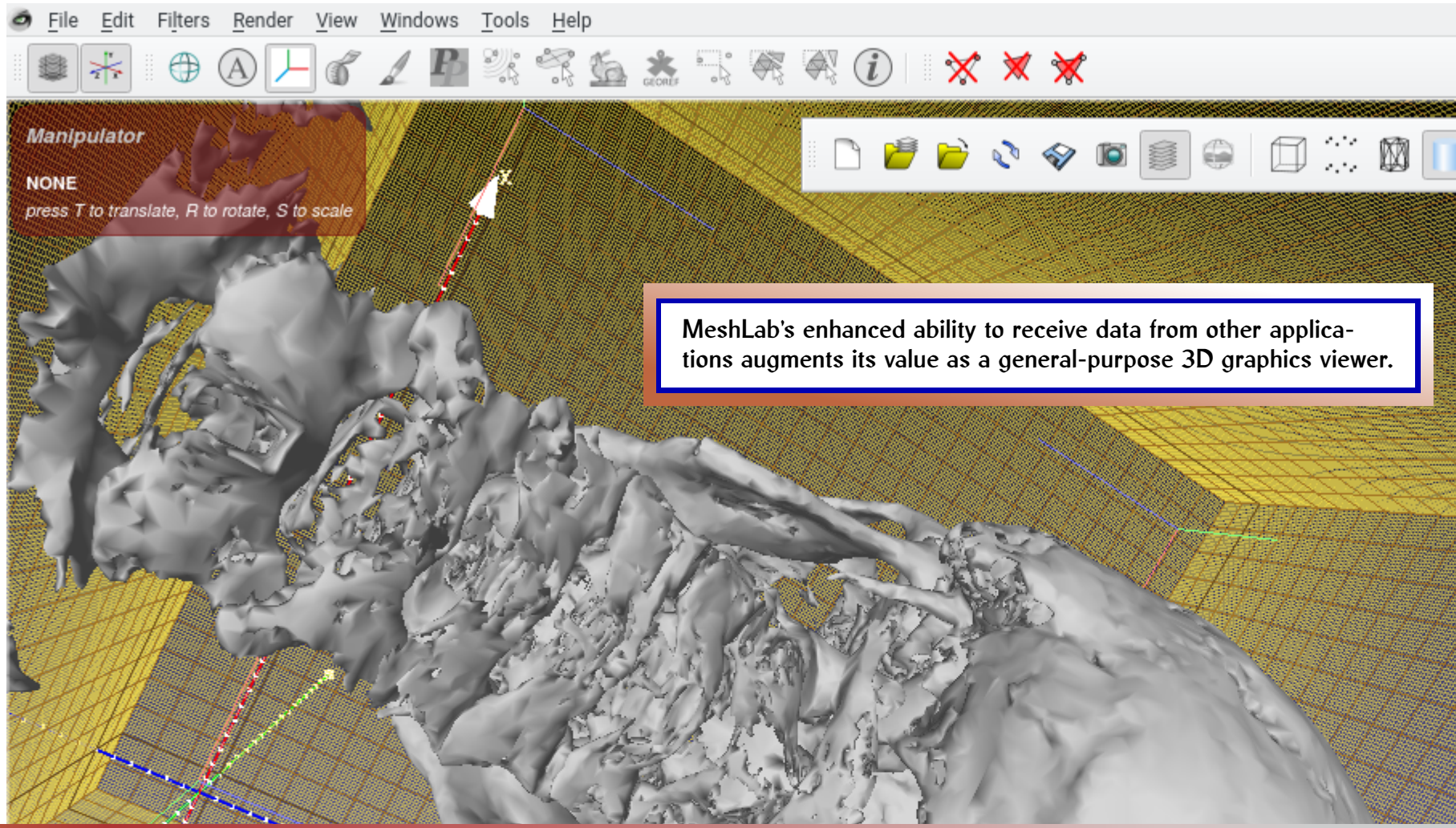
Inter-Application Networking via AXF*i* Plugins

AXF*i* Plugins enhance applications' image-annotation capabilities, and also allow applications to share image data. This slide's case-study demonstrates how inter-application data sharing can enhance the capabilities of two applications: 3DimViewer (a radiology tool) and MeshLab (a 3D graphics engine).



3D Graphics Sent to MeshLab

... Once the 3D tissue sample is constructed by 3DimViewer's algorithms, an AXF*i* inter-application networking protocol (implemented as an extension to both applications) allows 3DimViewer to export the model to MeshLab so that it may be studied in a more comprehensive 3D viewing environment.



MeshLab's enhanced ability to receive data from other applications augments its value as a general-purpose 3D graphics viewer.