International Photoacoustic Standardisation Consortium (IPASC)
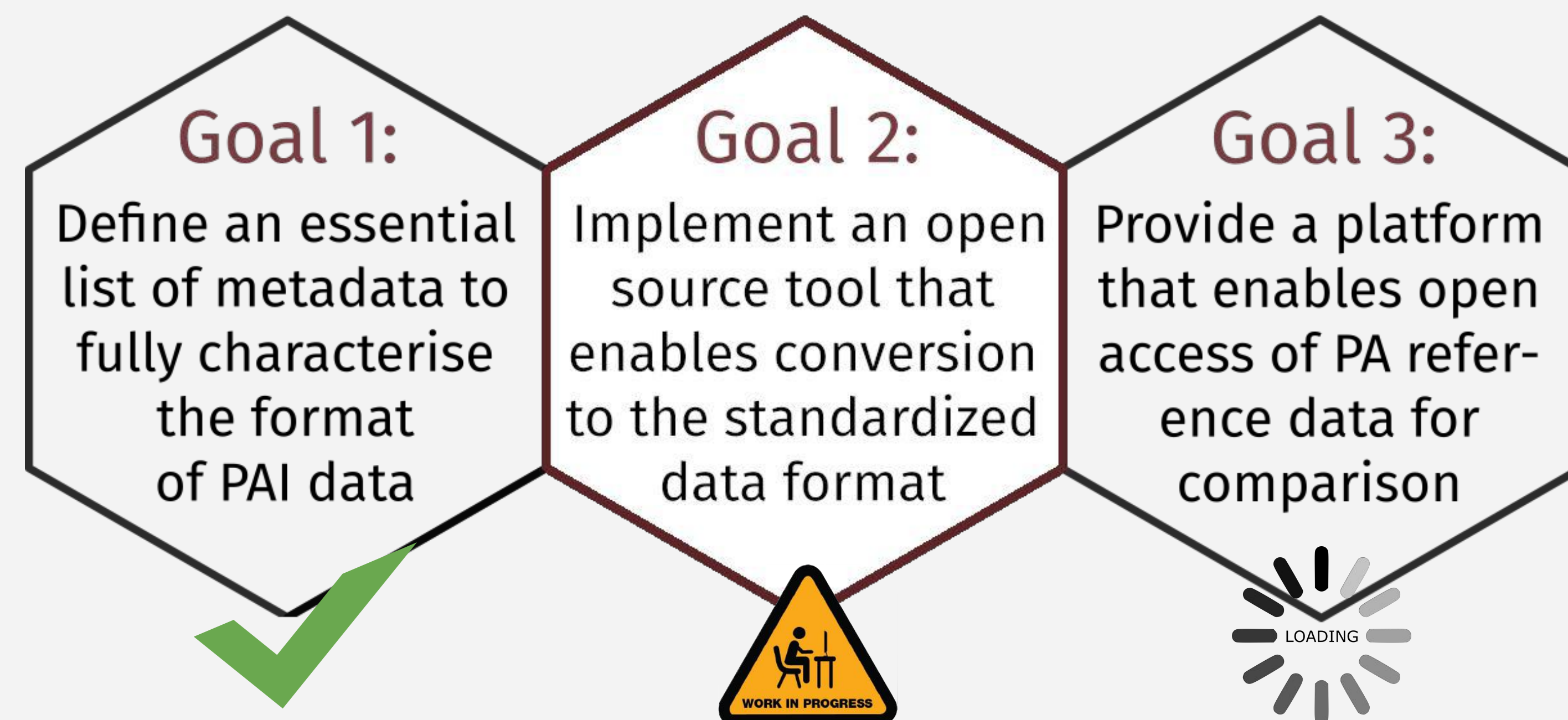## Facilitation of international collaboration by means of a standardised metadata format for photoacoustic images

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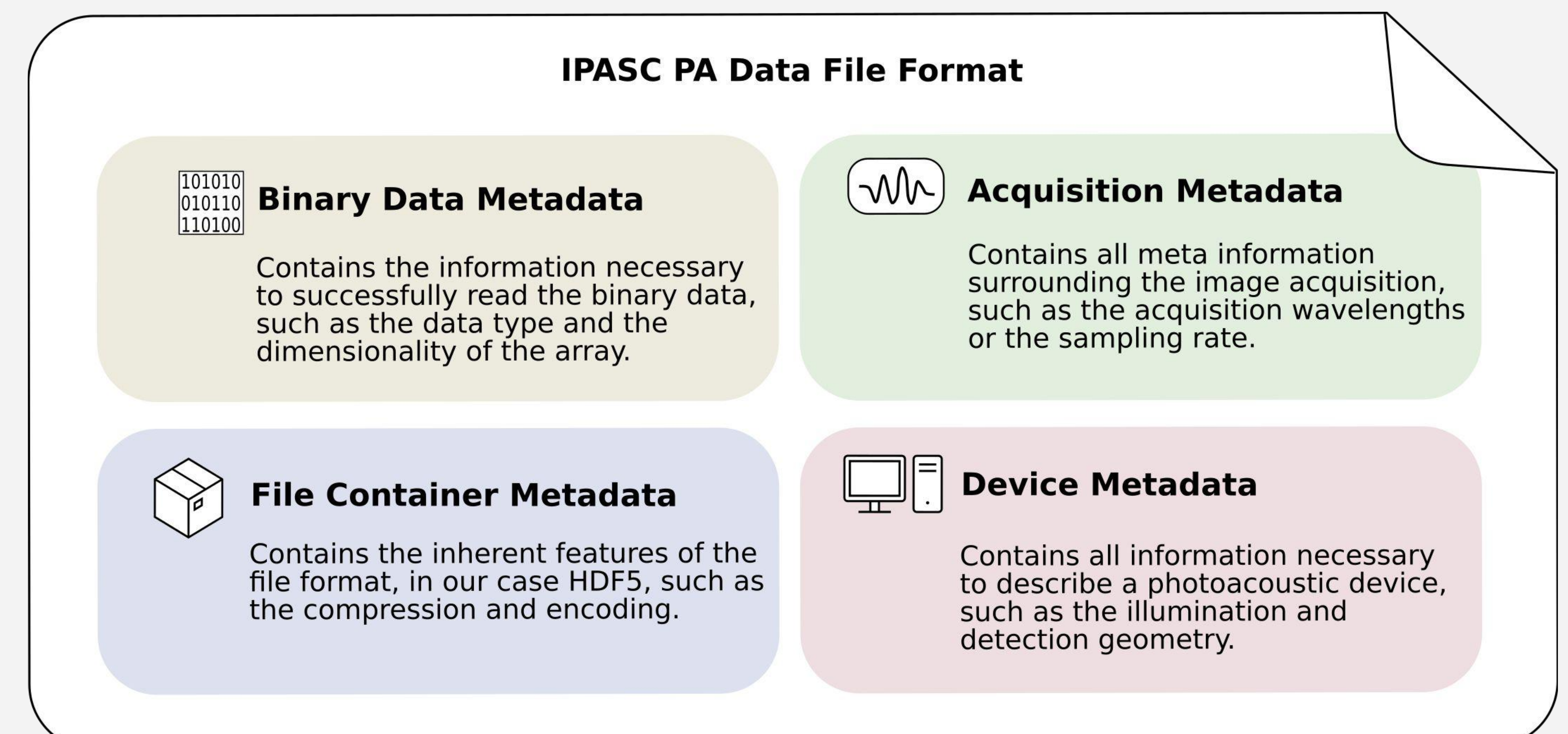[1]Cancer Research UK Cambridge Institute, Cambridge, UK; [2]German Cancer Research Center, Heidelberg, Germany

SPIE.

IPASC Data Acquisition and Management

Goal 1: Define an essential list of metadata to fully characterise the format of PAI data

Goal 2: Implement an open source tool that enables conversion to the standardized data format

Goal 3: Provide a platform that enables open access of PA reference data for comparison

Goal 2: Establishment of an **open source photoacoustic (PAI) data format conversion tool** application programming interface (API) to facilitate exchange and inter-comparison of PAI data between different users.
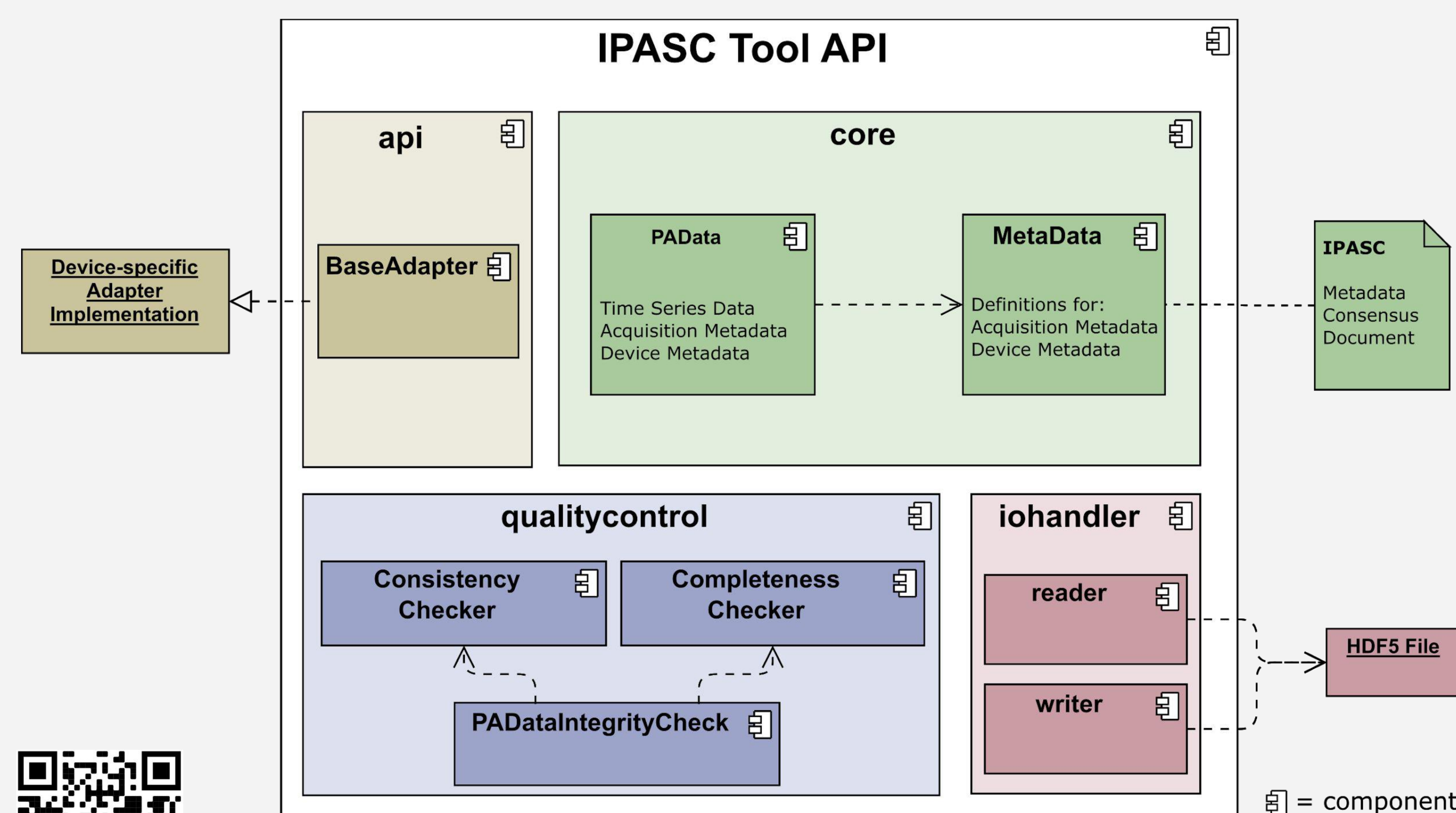
Goal 1: Metadata Consensus Document

IPASC proposed a set of **metadata parameters** that are essential to capture alongside the imaging data. List currently open for feedback:

IPASC PA Data File Format

Binary Data Metadata
Contains the information necessary to successfully read the binary data, such as the data type and the dimensionality of the array.

Acquisition Metadata
Contains all meta information surrounding the image acquisition, such as the acquisition wavelengths or the sampling rate.

File Container Metadata
Contains the inherent features of the file format, in our case HDF5, such as the compression and encoding.

Device Metadata
Contains all information necessary to describe a photoacoustic device, such as the illumination and detection geometry.
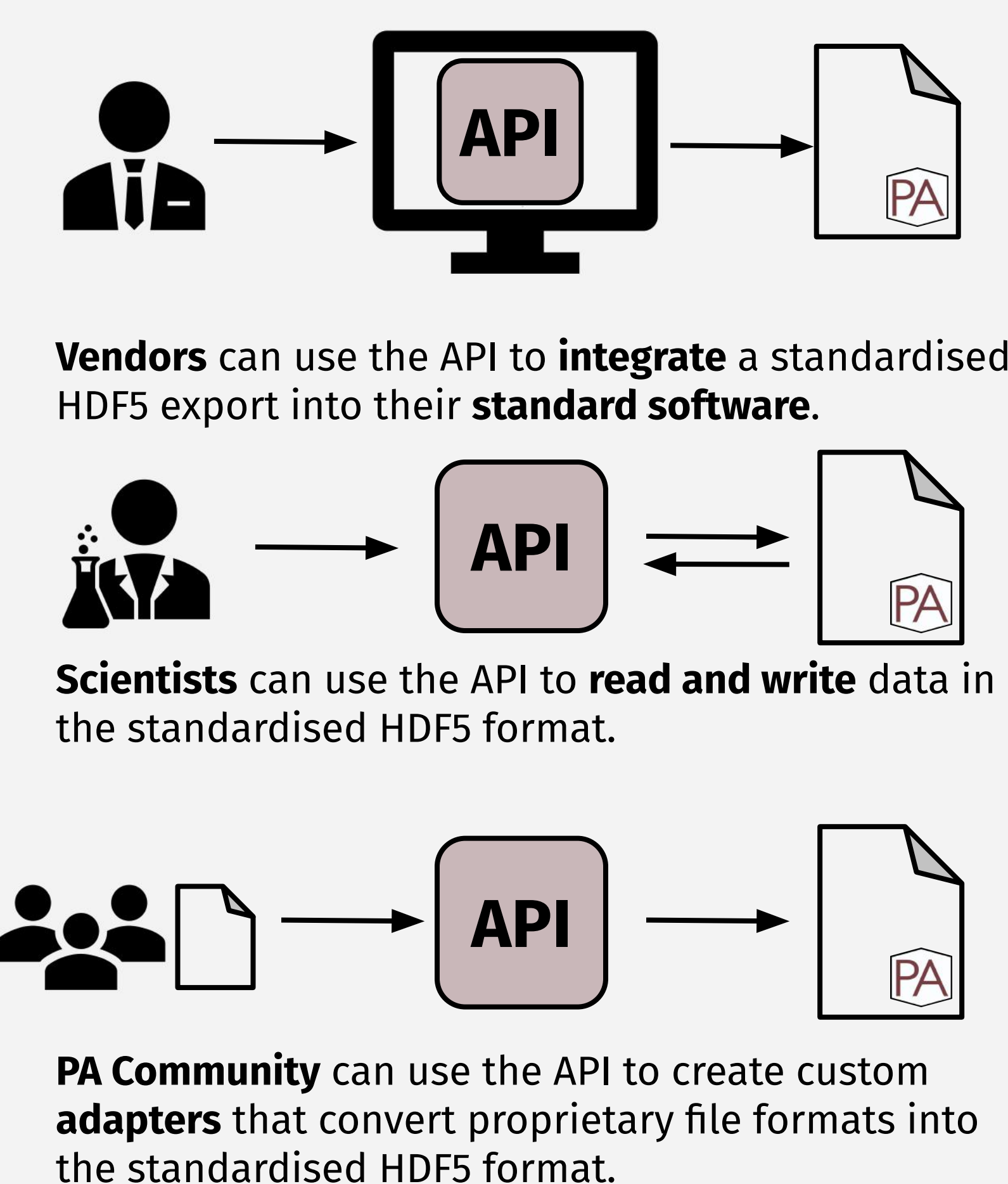
Standard Metadata Parameters

Goal 2: API Prototype

An open source **Python prototype** for the tool is being developed on Github. The software architecture is outlined in the component diagram below.

IPASC Tool API

api
BaseAdapter

Device-specific Adapter Implementation

core

PAData
Time Series Data
Acquisition Metadata
Device Metadata

MetaData
Definitions for:
Acquisition Metadata
Device Metadata

IPASC
Metadata
Consensus
Document

qualitycontrol
Consistency Checker
Completeness Checker
PADataIntegrityCheck

iohandler
reader
writer

HDF5 File

🗎 = component

https://www.github.com/IPASC/IPASC_DataConversionTool

API Workflows:

Vendors can use the API to **integrate** a standardised HDF5 export into their **standard software**.

Scientists can use the API to **read and write** data in the standardised HDF5 format.

PA Community can use the API to create custom **adapters** that convert proprietary file formats into the standardised HDF5 format.

Next Steps:

- Testing of the tool by the photoacoustic community
- Implementation of more adapters for proprietary formats
- Streamlining into relevant software tools
- Creation of a Graphical User Interface

Want to get involved?

Contact the IPASC team: