# Template LIM ToolScan

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# Introduction

This template explain what I think is important to report and how to report this information for images acquired with the ToolScan (R360) from Laboratory Imaging (LIM).  
The template is meant as an **easy and quick way to report extensive information (metadata) about ToolScan images**.

This template is split into two parts:

1. What to report in the method section of a paper
2. How to report all necessary metadata together with the data

In the first part, I provide a “fill-in-the-blanks” text that can be pasted into the method section of a paper. In the second, I will show that extensive metadata can be reported and shared without any effort, when the data are shared in appropriate formats.

This template is available as a markdown file (this file) as well as a [DOCX file](/Guidelines/LIM_ToolScan.docx).

# What and how to report

## Method section of a paper

I suggest to use the following text snippets. Parts in square brackets must be adjusted using the text within the brackets as examples or list to choose from. The rest of the text should of course also be adapted to the study.

Settings and their values can alternatively be presented as tables, either in the main text (recommended) or as supplementary material. The report(s), or parts of it (them), from the Shiny App [imaging-reports](https://github.com/ivan-paleo/imaging-reports) can be used for this.

“[*Objects* or *Features*] were documented with a ToolScan R360 (Laboratory Imaging, LIM) toolmarks document system at the IMPALA in [*flat*, *cylindrical* or *general*] objects mode. [Image types, e.g. *3D*, *textured*, *stitched*] images were acquired, with the [*laser*, *auto focus* or *manual*] focusing method and [*full (50 µm)* or *half (25 µm)*] focus steps.  
All data in original (ND2) and open ([*TIFF* or *PNG*]) formats, together with their metadata (acquisition settings), can be found on Zenodo ([*DOI*]).”

Also add details about any subsequent image processing. See recommendations in the repo’s [README](/README.md#processing).

## Data & Metadata

### General

The data should be uploaded on an open repository (e.g. Zenodo) in original format (ND2) to preserve the metadata. Because the ND2 format is proprietary, the data should also be uploaded in open formats for reusability. Add a [README file](#readme) (in TXT format) to the upload.

Follow the instructions in the how-to’s to [upload to Zenodo](/How-tos/Zenodo.md).

Even though many settings are included in the files as metadata, some of these settings should also be listed in the main text (see [Method section of a paper](#method-section-of-a-paper)).

### Data to share

* Upload the full-resolution, uncompressed images in ND2 format (LIM’s original format).
* Export and upload the images as TIFF or PNG (see the repo’s [README](/README.md#jpeg-png-tiff-raw) for choosing the most appropriate export format).
* Export and upload the metadata to CSV or TXT of one of the images. If you have different sets of settings for different sets of images, export and upload one CSV/TXT per set. The goal is to have all settings reported in an open format.

### README

Specify in the README file, in TXT format:

“Images were acquired with the software LUCIA Forensic [version number, e.g. *v8.20b1428*] from Laboratory Imaging (LIM).  
The images in original format (ND2) can be opened using the latest version of the free viewer available from the LIM website (<https://forensic.cz/viewer>). The [*CSV* or *TXT*] file(s) accompanying the images in [*TIFF* or *PNG*] format provide(s) the main metadata.”