





## *Glencoe Software and OME: Collaboration Update*


OME Community Meeting 2020

Wednesday, 27<sup>th</sup> May 2020



- Chris Allan -

VP Software Engineering

 @glencoesoftware

[callan@glencoesoftware.com](mailto:callan@glencoesoftware.com)

# Company Background

Founded in 2005 – Celebrating 15 Years of success!

- Based in Dundee, UK and Seattle, WA, USA
- Exclusive Commercial Partner of Open Microscopy Environment (OME)



## Our Team

10 Glencoe Software staff; more than 30 OME contributors



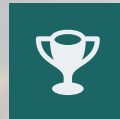
## Expertise

60+ years of experience in life sciences, imaging, publishing and engineering



## Established Worldwide

Customer base in pharma, academia, research and publishing



## Award Winning

BBSRC Innovator of the Year 2011

# Outline

- Who is Glencoe Software?
- Last 24 (!) Months
- *Converting Whole Slide Images to OME-TIFF: A New Workflow*
- *Region of Interest portability*
- *PathViewer Grid*
- Future directions



# Open Source Synergy

A Powerful, Bidirectional, **Exclusive** Partnership



## COMMERCIAL LICENSES

Exclusive provider of robust commercial licenses for OMERO Plus and Bio-Formats



## CUSTOMIZATION

Warranted and indemnified software solutions not available in the open source environment



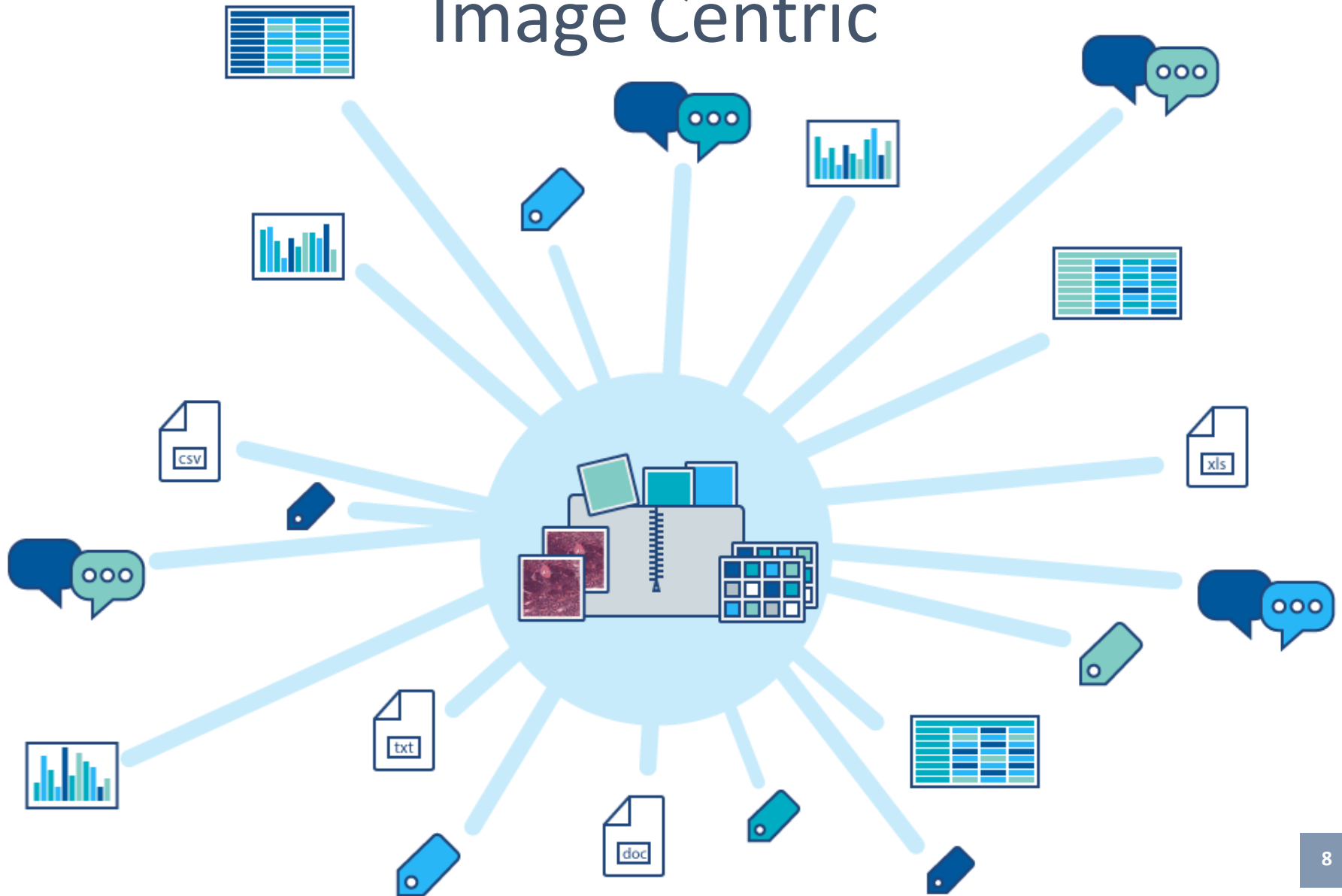
## SERVICE & SUPPORT

Commercial and community development synergy as your support resource

# Key Products

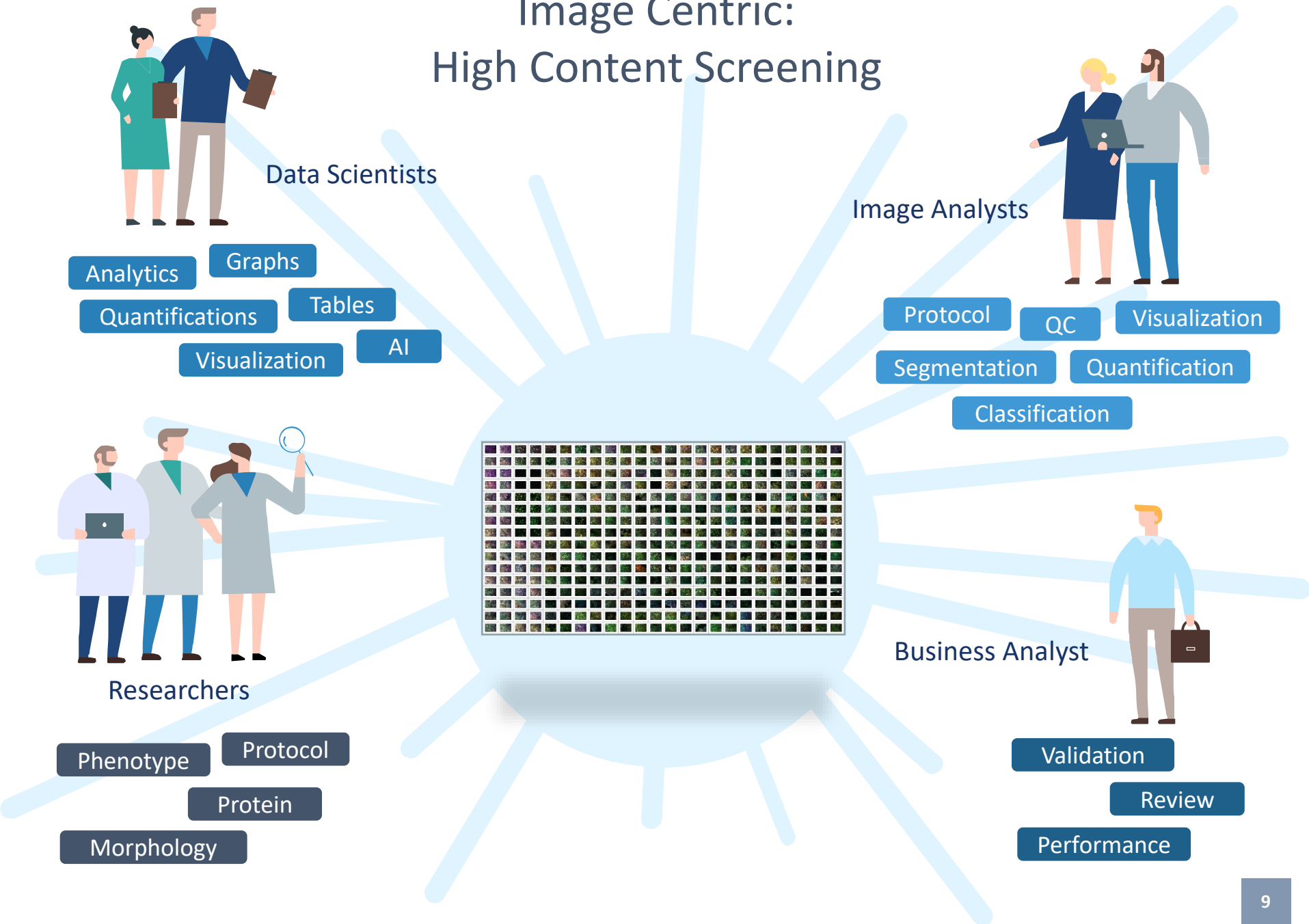


# Image Centric





# Image Centric: High Content Screening



# Image Centric: Digital Pathology



Data Scientists

Analytics

Graphs

Quantifications

Tables

Visualization

AI



Researchers

Biomarker

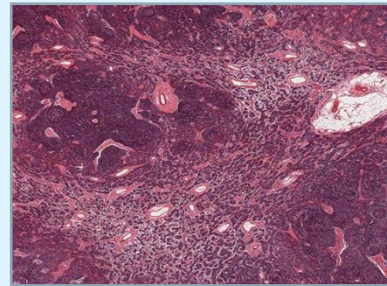
Toxicity

Multiplexed

Protocol

Trial

Staining



Pathologists

Specimen

Protocol

Report

Clinical

Patient



Image Analysts

Quantification

QC

Specimen

Classification

Segmentation

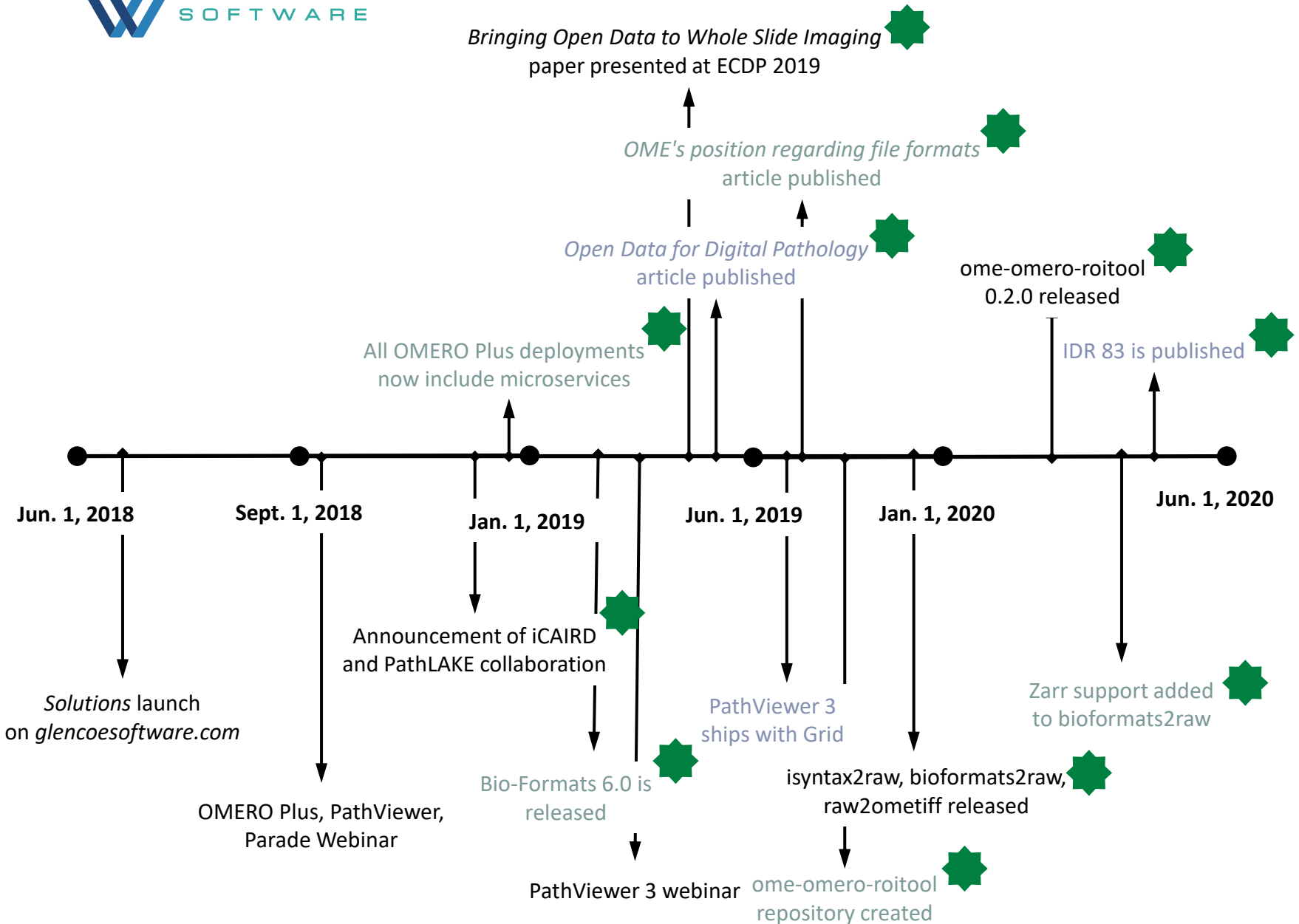
# The Last 24 (!) Months



# What we said a two (!) years ago

- *More work on both horizontal and vertical scalability for HCS and WSI*
- *A file format for 2018 and beyond*
- *Regular webinars showcasing Bio-Formats and OMERO*
- *Development projects with major instrumentation vendors ensuring PFF support*
- Expansion of the informatics capabilities of OMERO
  - OMERO.tables and metadata
  - Masks and Regions of Interest
- New directions and domains for PathViewer

# Timeline



# What we said a two years ago – Did we deliver?

- *More work on both horizontal and vertical scalability for HCS and WSI*
  - ***Microservices now in use on OMERO Plus installs!***
- *A file format for 2018 and beyond*
  - ***Community evangelism (articles, papers, etc.)***
  - ***Bio-Formats 6 contribution***
  - ***isyntax2raw, bioformats2raw, raw2ometiff***
  - ***Guided several instrumentation and analysis software vendors on OME-TIFF support***
  - ***Encouraged OME-TIFF use in public WSI repositories with clinical relevance***
- *Regular webinars showcasing Bio-Formats and OMERO*
  - ***4 (2 per year)***
- *Development projects with major instrumentation vendors ensuring PFF support*
  - ***5 (CV7000, GE MicroCT, Ventana BIF, RareCyte RCPNL, Hamamatsu NDPi Fluorescence)***
- *Expansion of the informatics capabilities of OMERO*
  - OMERO.tables and metadata
  - Masks and Regions of Interest
    - ***ome-omero-roitool***
- *New directions and domains for PathViewer*
  - ***PathViewer Grid***

# Converting Whole Slide Images to OME-TIFF: A New Workflow



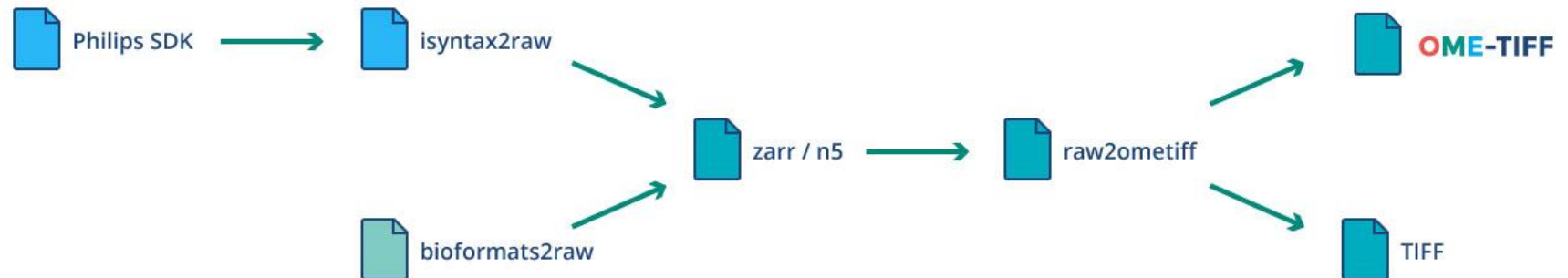
# File format conversion – Why?

- **Isn't this just like OMERO 4!?!**
- Some file formats require a third-party SDK
- Some file formats are incredibly internally complex or require pyramid generation
- File format uniformity is extremely important to those running public resources
- Read optimized file formats are useful, sometime essential
- Being unopinionated on compression is important



# Converting Whole Slide Images to OME-TIFF: A New Workflow

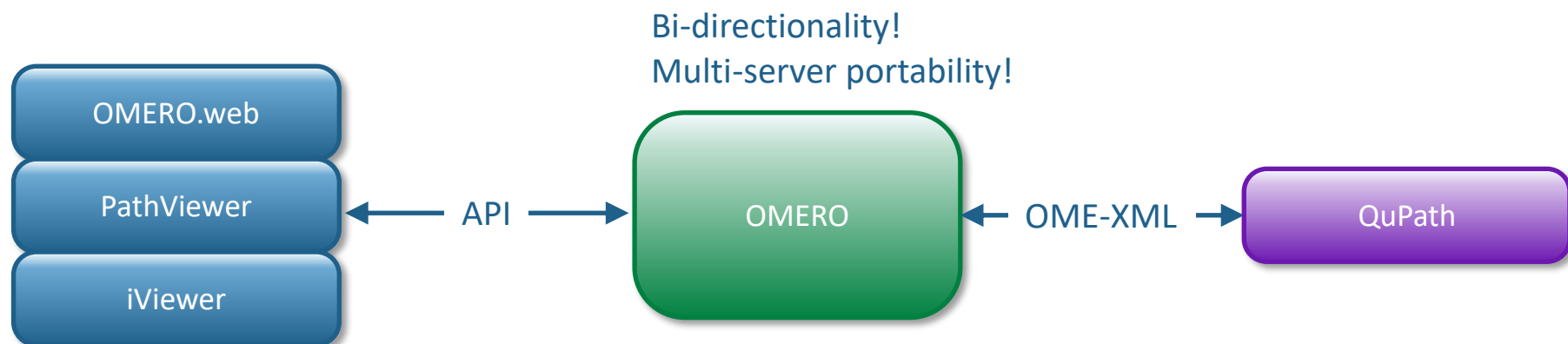
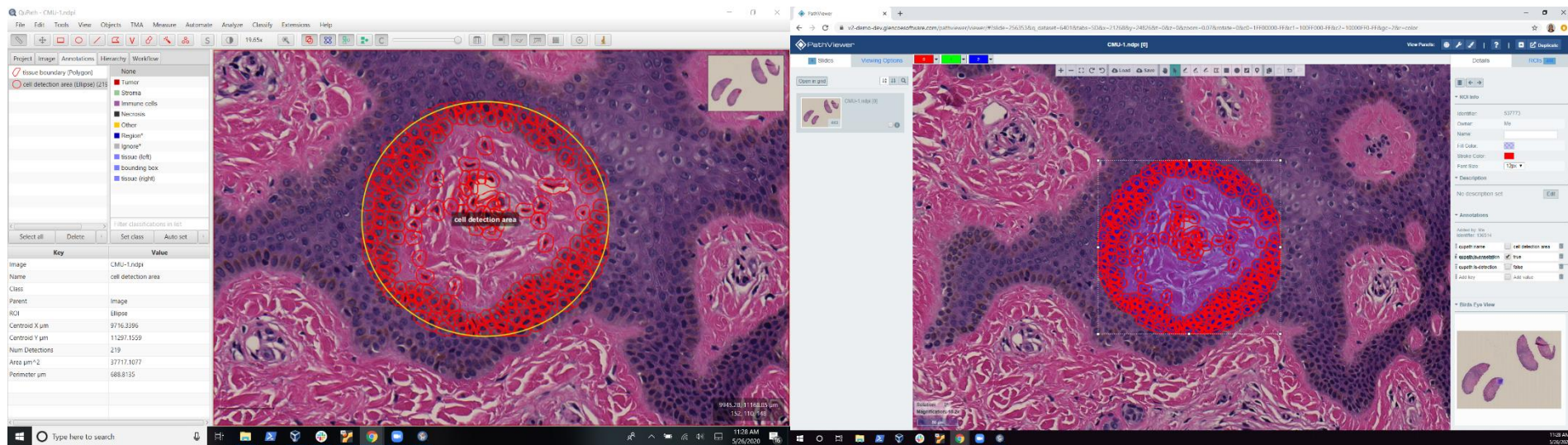
## Converting Whole Slide Images to OME-TIFF: The Solution



# Region of Interest Portability



# Region of Interest Portability – ome-omero-roitool



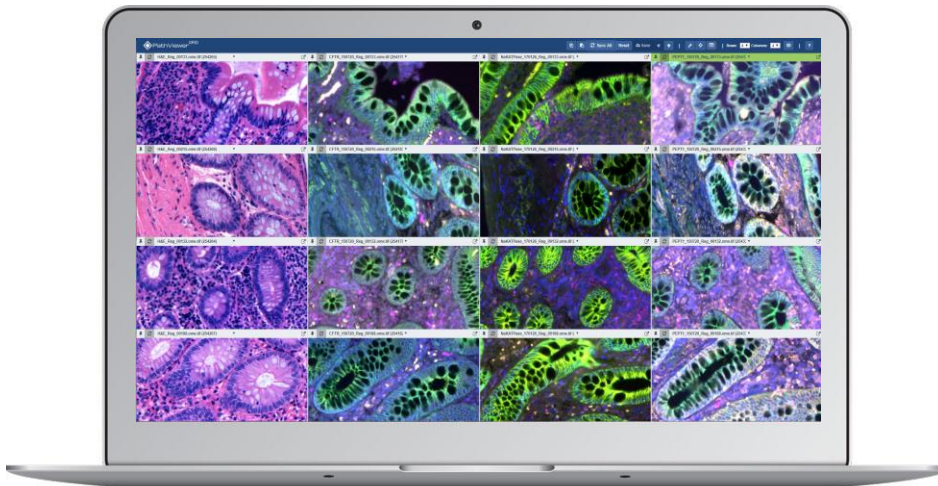
Used to transfer ROIs for IDR 83!

<https://idr.openmicroscopy.org/study/idr0083/figure/4i>

# PathViewer Grid



# PathViewer GRID



- View and draw on multiple slides at the same time
- Synchronize slide views
- Create, save, edit and share Grid Views
- View up to 16 bright-field and/or fluorescent slides on a single Grid Page
- Hide controls to extend visible area
- Use keyboard shortcuts for efficient navigation

# Summary



# Where to from here?

- *A file format (NGFF) for 2020 and beyond; including Regions of Interest!*
- *Investigating directions for compression in biomedical imaging*
- *Expand support for NGFF in microservices*
- *Regular webinars showcasing Bio-Formats and OMERO*
- *Development projects with major instrumentation vendors ensuring PFF support*
- Expansion of the informatics capabilities of OMERO for HCS
- New directions and domains for PathViewer





**Jason Swedlow**  
President & CEO



**Chris Allan**  
VP Software Engineering



**Jean-Marie Burel**  
Senior Software Architect



**Andreas Knab**  
Software Developer



**Kevin Kozlowski**  
Software Developer



**Melissa Linkert**  
Software Developer



**Chris "Stick" MacLeod**  
Systems Administrator



**Josh Moore**  
Senior Software Architect



**Douglas Rennick**  
Systems Administrator



**Emil Rozbicki**  
Head of Applications

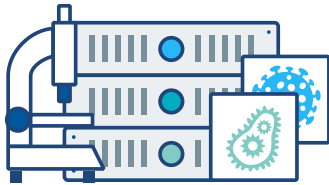


**Wilma Woudenbergh**  
PA to Jason Swedlow



# Our Solutions

Let's work together



Terabyte Scale Imaging  
(LM, EM, HCS, DP, MI) \*



Image Informatics Solutions



Images as Knowledge

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## Expertise

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## Solutions

\* (light microscopy, electron microscopy, high content screening, digital pathology, medical imaging)

# Thank you!

Visit us at [www.glencoesoftware.com](http://www.glencoesoftware.com) for more info, or follow us on Twitter [@glencoesoftware](https://twitter.com/glencoesoftware)

