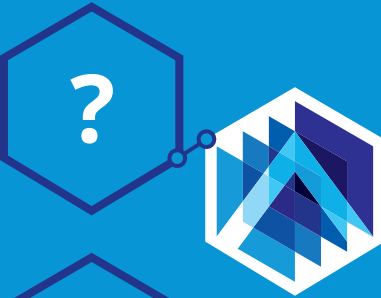## Going beyond bioinformatics

Aspect Analytics bridges the gap between algorithmic development in bioinformatics research and enterprise-grade software platforms to support key MSI-based applications. We are convinced that dedicated software tools are pivotal to unleash the full potential of MSI.

Mass spectrometry imaging is ...

Becoming a routine reality
for specific applications

?

Application-oriented data analysis
to support standardized workflows

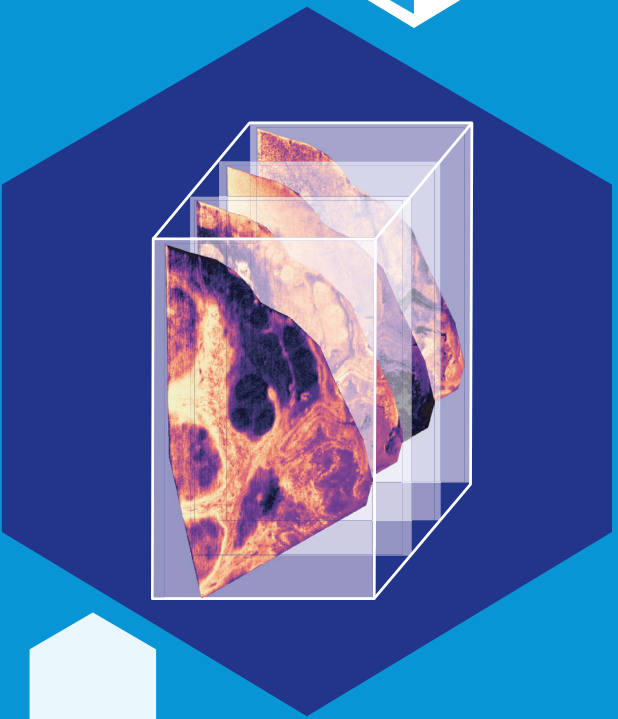Generating ever increasing
data volumes and throughput

?

Scalable data analysis and
computational infrastructure

Evolving into a multidisciplinary
nexus technology

?

Extensible platform enabling
collaborative analyses

HOW WE GO BEYOND
BIOINFORMATICS

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company/aspectanalytics   /AspectAnalytics #AI4MSI

Aspect
Analytics

BEYOND
BIOINFORMATICS

Bioinformatics

Our deep expertise in bioinformatics, machine learning, AI and software engineering enables us to develop optimal data analysis strategies that cover the full breadth of MSI applications. We leverage our team's multifaceted skills and knowledge to provide robust, reusable tools that streamline your critical data analysis workflows.
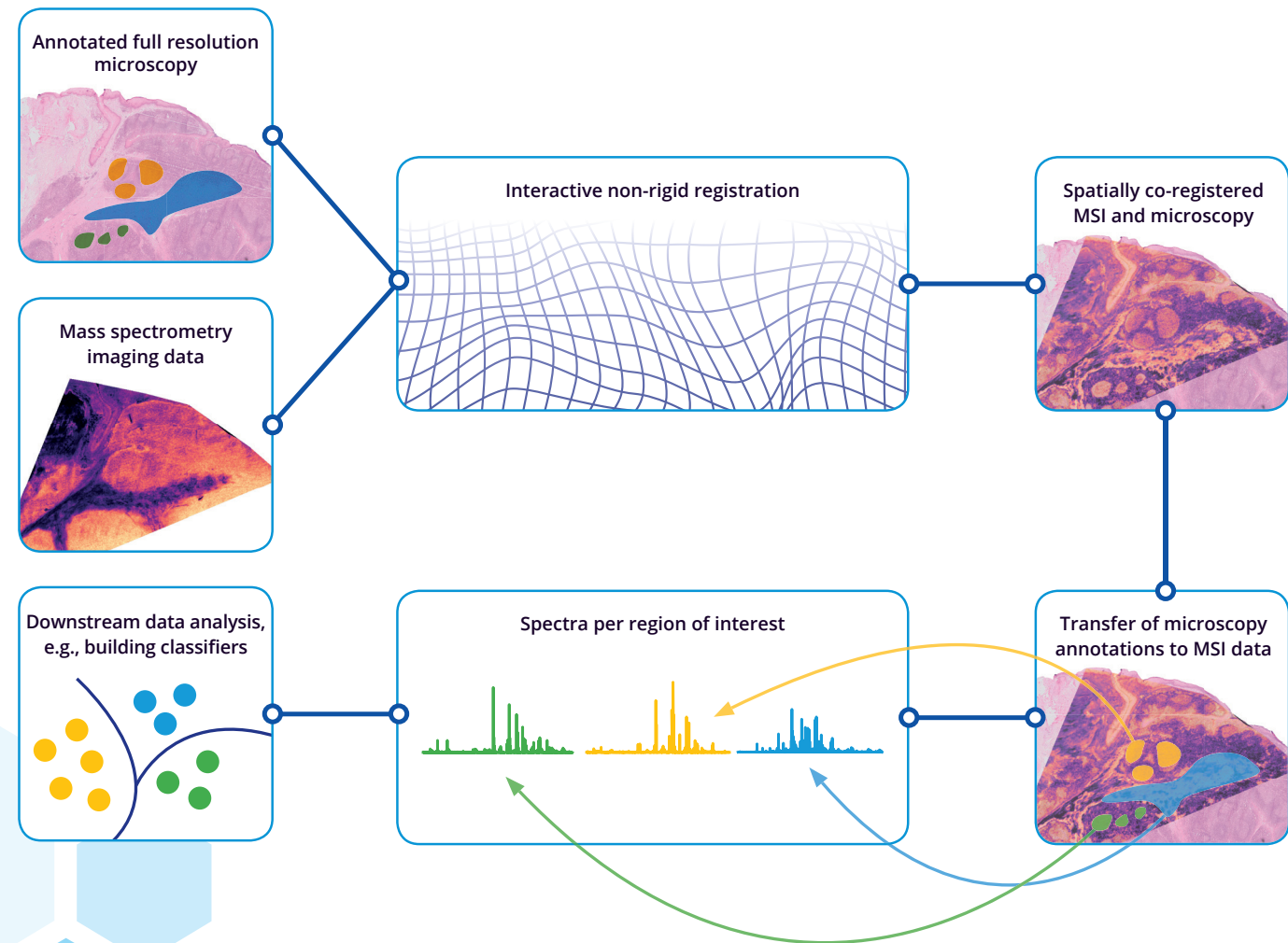
State-of-the-art data analysis
· Advanced machine learning, AI and statistical approaches
· Scalable towards large experiments / analyses across many tissues
· Vendor neutral

Multimodal / multi-omics integration
· Native support for high resolution microscopy
· Interactive, non-rigid image registration between modalities
· Extensible design for multidisciplinary data integration

Streamlined workflows for standardized applications
· Optimal selection of algorithms per application
· Dedicated UI for team members with varying expertise
· Built-in quality control, automation & guidance during data analysis

Annotated full resolution microscopy

Interactive non-rigid registration

Spatially co-registered MSI and microscopy

Mass spectrometry imaging data

Downstream data analysis, e.g., building classifiers

Spectra per region of interest

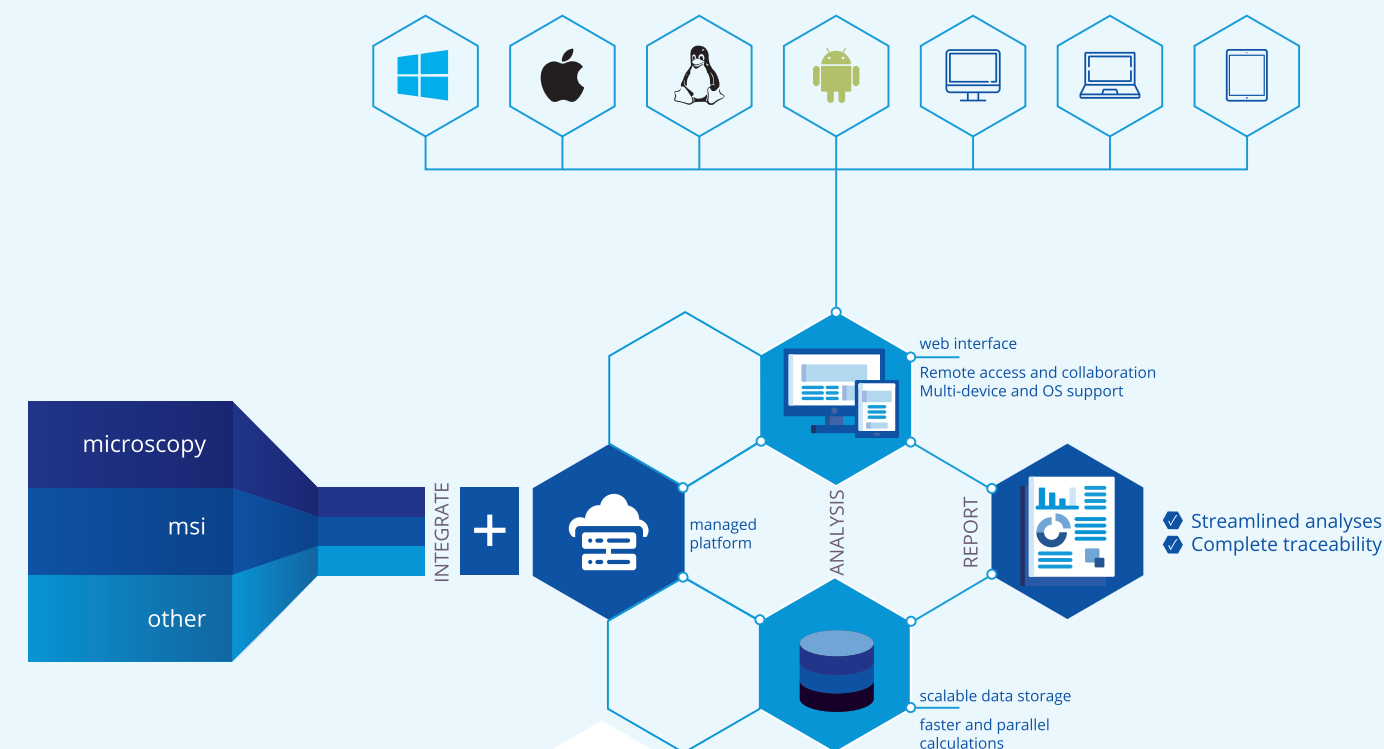Transfer of microscopy annotations to MSI data

Platform solution

Aspect delivers enterprise-grade solutions that truly empower your lab and collaborators. Our software unifies all MSI data-related tasks into a single, streamlined workflow, ranging from data storage and analysis up to efficient reporting towards downstream stakeholders.

Modern, future-proof software architecture
· Scalable by design to support large, high-throughput data analyses
· Web-based, enabling remote data analysis / collaboration / trainings
· Best-in-class cyber security and cryptographic routines

Comprehensive, integrated solution
· Data storage and management, including traceability and auditing features
· User management, access control and team management
· Infrastructure can be fully managed, or your platform can be hosted on-premise
  – Fully managed — no IT expertise/maintenance required on your end!

microscopy

msi

other

INTEGRATE

managed platform

ANALYSIS

REPORT

web interface
Remote access and collaboration
Multi-device and OS support

✅ Streamlined analyses
✅ Complete traceability

scalable data storage
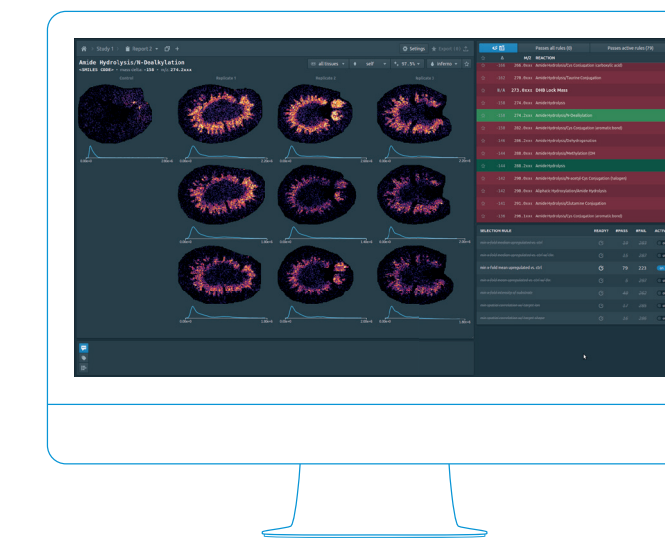faster and parallel calculations

Custom development

We offer custom development to fully address the specific challenges inherent to your applications. Tailored workflows maximize the insights gained from every single experiment, streamline the entire data analysis process and optimize human operator time. Furthermore, we can provide seamless integration with your existing systems, including other omics or imaging modalities, lab information management software and more.

Our custom development can draw upon the modular and API-driven design of our existing components, which enables (i) rapid development of custom data analysis pipelines and (ii) integration with the external software you currently use.

Our approach to custom development
• **Define**
  – Explore problem and context in depth together with client
  – Build strategy to meet challenges, including UI mockups / flow charts
  – Collaboratively determine scope of solution

• **Develop**
  – Select appropriate algorithms for use-case, build custom algorithms if necessary
  – Optionally use existing Aspect products and modular components as a basis
  – Integrate novel data analysis components into full web-based solution

• **Deploy**
  – Containerized solutions, easy to deploy and scale on modern systems
  – Software delivered via secured private registries, straightforward to upgrade
  – On-premise deployment — Aspect helps/trains internal IT staff
    or Fully managed deployment options available, no IT expertise required by client

Metabolite Explorer is a solution that was co-developed with a large pharmaceutical company, which streamlines metabolite screening via flexible filter rules and enables automated generation of structured reports of retained metabolites. The tool natively supports panels of tissues and accounts for experimental information such as dosage levels, technical replicates and more.