Software Solutions & Digital Pathology
Jeremy Johnson
IDEXX Laboratories – Improving the wellbeing of Pets, People & Livestock

**Diagnostics, Service and Software that advances the profession**

Veterinary Diagnostics (Companion Animal Group)
• Reference laboratories & POC testing solutions
• 6 continents
• ~80 laboratories
IDEXX Laboratories: Innovation Driven Growth

Companion Animal Group Characteristics

- Global market leadership – grounded in innovation
- IDEXX VetLab®
- IDEXX Reference Laboratory
- Regulated by the USDA

IDEXX Revenue ($B)

2005 2012 2017

Companion Animal Group (CAG)

Water Testing
Livestock Testing**
IDEXX CAG: VetLab-real-time diagnostic

IDEXX Instrument Portfolio

Hematology

Clinical Chemistry

Urinalysis
IDEXX CAG: Reference Labs-Broad & Unique Menu

Pathology Operations:
- 8 Histology centers
- Surgical Pathology focus
- 130 Veterinary Pathologists
- 15 Countries
- Courier, FedEx/UPS/DHL, Royal Post from Veterinary clinics
- 50,000 cases/month
Strategic Challenges with Pathology Service

Supporting Business Growth

- Pathologist recruitment
- Space constraints
  - Laboratory & Office
- Service promise (2-3 days)
  - Pathologist of choice
  - Leveraging expertise (discipline & species)
- Capacity planning and workload balancing
  - Metrics reporting, optimization and innovation
Digital Solution to Address Challenges

Local lab w/ local pathologists → Multiple labs w/ remote pathologists

Proportional volume
Histology locations
Pathologist locations

1st digital cases reported in 2007
Digital Pathology: Transforming our Service

People Adaptation

- **Denial**: focused on self-preservation; focused on ME; begin to understand how the change impact
- **Resistance**: resistant to accepting the change; hesitant; anxious
- **Acceptance**: accepts the change; understand the reasons and benefits; focus is on accomplishment
- **Commitment**: committed to the change; no longer “the change” – it is what is now

**Loss**: the change is introduced; leave comfort zone of the familiar; unfamiliar and “out of kilter”

**Exploration**: better understanding of the meaning of the change; open to exploring it

**TIME**

Systems & Workflow: Creation & Optimization

- **People**
- **Process**
- **Technology**
Operational Challenges & Implementation

Operational Challenges
- Laboratory connectivity
- Whole slide imaging
  - Who & where
- Case assignment
  - Network transparency
- Responsive to virtual pathologist

Implementation-IDEXX Phases
1. **Equipment**: Added scanners & servers by location
2. **People**: Pathologists, Pathology coordinators & logistics
3. **Systems**: LIS and integrations
LIS & System Integrations

LIS Requirements
Intuitive single user interface
“Single Histology Lab”
Automation
- pathologist case scheduling
- case level loading (point weighting)
- case rework routing
Sample tracking
Metrics reporting
- capacity planning, opportunity & impact
Predictive customer results
Customization @ customer level
Pathologist Scheduling & Case Distribution

Case assignment and pathologist level loading
- Case ready state
- Case equivalencies by code
- Continuous feed
- Intelligent prioritization

Histology labs
“Clean Room”

AP LIS (Novopath)
WSI viewer
Pathologist Worklist
Add-on testing
Dictation software
Notes & images
Histology workflow
Core LIS
Customer Support
Data Analytics
Customer Reporting

Auto distributor
Pathologist queue
Global Challenges & Opportunity

Challenges:
1. Language
2. Certification
3. Culture & Customs
4. System latency & Cyber security

Opportunities:
1. Recruiting & Capacity
2. Customer service
3. TBD
Thank you
Pathologist Distribution & Auto-Assignment

- Ability to automate pathologist distribution based on client’s preferences, individual benchmarks, state requirements, payer requirements or any customizable criteria that may be applicable.
  - Reduce time and resource planning for individual case assignment
- Automated case distribution facilitates a balanced workload, increases client satisfaction, and reduces reimbursement issues
- Load balancing feature to allow for equally weighted cases distributed to all pathologists. Case complexity also taken into account when assigned.
The Staff Scheduler is an employee management module that allows the lab managers to configure the employee scheduling, compensation, client preferences, and some additional data metrics.

Using this module, the lab maintains more efficient workload balance as well as having a transparent view of the staff availability in conjunction with the case load volume.
Case Distribution Aligned with Digital Pathology

- Whole Slide Imaging (WSI) instruments interfacing use digital slides for easy access and sharing, increased accuracy, and faster diagnoses.
- Provide pathologists the flexibility to render diagnoses remotely using a real-time viewer of the scanned slides for a given case.
- Whole slide imaging along with auto case distribution provides for an efficient process to have slides examined across the laboratory network.