Positioning Your Lab to be the Keystone for Precision Medicine in Your Community

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Today

- My background
- What is modern (next-generation) informatics?
- Why should you consider adopting a modern informatics stack?
- Case study: Volente Diagnostics
- Vision of the future
- Action Plan

Unlock the opportunity for clinico/-omic data
My Background

- I’ve been a software engineer for decades. The first software I wrote was a validated analysis tool for the Molecular Diagnostics Lab at University of Minnesota
- BS in Symbolic Systems at Stanford (Computer Science and A.I.)
- Ph.D. in Neurobiology and Behavior at Univ. of Washington (Neurophysiology)
- Physion Consulting, INCF
- Ovation
Lab Informatics Challenges

- **Operations**
  - Information handoff between services (CRM, EHR, RCM, interpretation, etc.)
  - Multi-site, collaborative Dx
  - X-omic big data
  - New applications/workflows/technologies, proprietary diagnostics

- **Community**
  - Real World Evidence
  - Outcomes-based reimbursement
  - Seizing this new opportunity:
    - Consent
    - Data model
    - Informatics
Clinical next-generation sequencing is performed by independent or hospital labs
What is modern (Next-generation) informatics?

- Delivery
- Architecture
- Design
Next-generation Informatics: Delivery

- “Software as a Service” (SaaS)
- Cloud-based
- Web-browser client application

Benefits for the lab...

How we deploy and consume software applications has changed...

- Lower Total Cost of Ownership
- Focuses on your core expertise
- Capital vs. Operating benefits
Next-generation Informatics: Architecture

- Expertise
- Redundancy
- Availability
- **Security**
  - HIPAA
  - SOC2
  - GDPR

Benefits for the lab...
How we architect software infrastructure has changed...

- High-availability
- Scalability (burst capacity)
- Instant multi-site deployments
- Cross-organization access (when desired)
- *Best-in-class* security
Next-generation Informatics: Architecture

- Multi-tenant
  - Automated PQ
  - Benchmarks
  - Best practices
- Best-in-class service integration
Next-generation Informatics: Architecture

Zero-trust security
- Pioneered by cloud providers (Google)
  - Used by many of the largest technology companies
  - Fully HIPAA/SOC2 compliant
- Authentication/authorization at every interaction, not just at the boundary
- Not relying on VPNs or firewalls

Benefits for the lab...
How we secure software applications and infrastructure has changed...

- Fine-grained authorization
- Secure application access from any modern browser (even mobile)
- Security “from the ground-up” so you don’t have to retrofit or re-develop after each informatics change
- Liberating, agile evolution of your informatics stack
Next-generation Informatics: Design

- **Software**
  - Modular service architecture
  - Automated test coverage
- **Human-centered design**
un·LIM·it·ed
/ˌənˈlimidəd/
adjective
1. not restricted

• LIS + LIMS + ...
• Best-in-class partners
• Big data
• Multi-site deployments
• Proprietary diagnostics
• Useable, actionable data

Operational analytics
Value-add aggregate data for customers
Case Study
Volente Diagnostics
Mission & challenges

Status quo molecular infectious disease
- Limited menu
- Providers struggle to derive actionable insight

Challenges
- Large menu (15+ panels, 180+ tests)
- Big data
- Collaboration with PharmD
- Rapid turn-around
- Multi-site expansion

“Nobody had done what we’ve done. It was a custom operation from the beginning”
Solution — Ovation Diagnostic

➤ Roll-out...on schedule.
➤ Proprietary interpretation & report
➤ Integrations: Xifin, CRM, PharmD
➤ Ready for rapid growth

“Ovation has always been there for us throughout this process.”
Volente Keys to Growth

Confidence in technology partner
- Incubate new molecular workflows in Ovation

Data Services
- Feedback through dashboards
- Business analytics
- Value-add: localized epidemic identification and tracking

Scale-out
- 5 year plan: world-wide lab network
- Consistent, turn-key informatics stack

“We found the right partner and we never considered turning back”
Outcomes

Modern informatics unlocks opportunity.

- Ready to launch
- Ready for growth: lab, network
- Network-wide data services
  - Internal analytics
  - Proprietary diagnostic R&D
  - Provider reports (value-add)
A keystone for precision medicine in the community

- **Actionable**: PharmD recommendation
- **Visionary**: Epidemic detection and management
- **Valuable**: Utilization reports and insights
A Vision for the Future

Unlocking Innovation
Partnering for Precision Care
Moving at the speed of software
Unlocking Innovation

1. Identify gaps in community precision medicine
2. Leverage technology to service community needs by enabling:
   a. New labs
   b. New workflows
   c. Proprietary diagnostics
3. Privacy-preserving big data to enable innovation at speed
Partnering for Precision Care

Improved Real World Data

- **Health systems***
  - Patient journey/cohort by x-ome
  - Precision treatment
  - Trial site validation

- **Industry + patients**
  - Just-in-time clinical trials
  - Shorten time from symptom to therapy

- **Payors**
  - Outcomes analysis
  - Cohort analysis by x-ome
Labs are uniquely positioned
- Consent is already part of clinical workflow
- Established connections across value chain

Society demands data privacy and consent
- GDPR, CA data privacy, etc.
- Portable Legal Consent

Consent must be verifiably tracked with data
- Right to revoke consent
- Attestation of compliance
Action Plan

1. Identify the data needs of your provider community…
   a. Journey/Outcomes analysis
   b. Utilization
   c. Bio markers

2. Build for Partnership in Precision Care
   a. Consent
   b. Data model
   c. Infrastructure/informatics

3. Get started: new workflows…new informatics
Out-of-the-box Workflows

- Cancer Genomics
- Pharmacogenomics
- Infectious Disease
- NIPT
- Inherited Disease
- Toxicology & Clinical Chemistry

For Cutting Edge Technology

- NGS
- ddPCR
- qPCR
- Microarray
- LC-MS/MS

Ovation Diagnostic
Summary

• What is modern (next-generation) informatics?
• Why should you consider adopting a modern informatics stack?
• Case study: Volente Diagnostics
• Vision of the future
• Take Home Plan

Unlock opportunity with modern informatics
We’re hiring!
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