Digital Healthcare: Evolving Business Models

2 March 2016

Robert Mittendorff, MD, MBA, Partner, Norwest Venture Partners
Biography

• Partner, Norwest Venture Partners, a $6B AUM Venture Firm in Palo Alto
  – Investor in HealthCatalyst, iRhythm, Omada Health, Telcare, TigerText, Crossover Health, iCardiac, Misfit Wearables, BASIS

• Former VP Marketing and BD at Hansen Medical
• Attending Emergency Physician (Board Certified)

• Residency Stanford
• MD Harvard
• MBA Harvard
• BS Johns Hopkins (Electrical / Biomedical Engineering)
Conflict of Interest

Robert Mittendorff, MD, MBA

Ownership Interest via Norwest Venture Partners in HealthCatalyst, Omada Health, iRhythm, Telcare, Misfit Wearables (formerly), BASIS (formerly), CareCloud, ClearCare, TigerText, Crossover Health, iCardiac
Learning Objectives

• Understand key drivers of new opportunities in digital health and health IT

• Understand relevant common business models and tradeoffs

• Investigate the challenges in commercialization for each model

• Understand the methods of valuation and analysis applied to each model
Agenda

• Drivers of New Opportunities
• Business Models in Digital Healthcare
• Digital Healthcare Commercialization Strategies and Approaches
• Key Metrics and Valuation Methodology
Digital Health Investments ($6B)

Digital Health Funding Trends: Deals and Dollars Invested
2010-2015

Source: CBInsights 2016
$4.5B in Venture Funding in 2015

Source: RockHealth
187 M&A Deals and 5 IPOs

### Digital Health Acquirers

2015 (notable transactions listed at right)

<table>
<thead>
<tr>
<th>Sector</th>
<th># of M&amp;A deals</th>
<th>2015 total</th>
<th>Aggregate transaction value</th>
<th>Per disclosed deal</th>
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<td>Tech</td>
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<td>MyFitnessPal</td>
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<td>IBM</td>
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<td>Nextdocs</td>
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<td>Lively</td>
<td>GreatCall</td>
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<tr>
<td>CardiolInsight</td>
<td>Medtronic</td>
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</table>

Source: RockHealth
A Sample of Funding: Across the Spectrum

B2B2C: Business to Business Sale; then “sale” or “conversion” of individual
B2B: Business to Business Sale
B2C: Business to Consumer Sale

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<th>Company</th>
<th>Amount</th>
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<td>B2C</td>
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<td>Grand Rounds</td>
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<td>TigerText</td>
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<td>B2B2P; Providers and Companies</td>
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<td>Doctor On Demand</td>
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<td>B2C and B2B2C; Employer</td>
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<td>MDLive</td>
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<td>Omada Health</td>
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<tr>
<td>Evariant</td>
<td>$42.3</td>
<td>B2B; Providers</td>
</tr>
</tbody>
</table>

Source: SEC info, Pitchbook, CBInsights
Opportunities and Risks: All Need IT

• **New Payment Models**: Capitation, Bundled Payments, Quality Measurement

• **Alternative Care Models**: Telemedicine, Chronic Care Management, On DemandCare

• **Consumer Directed Healthcare**: High Deductibles, Vouchers, & “Wellness”

• **Data Liberalization**: FHIR, Exchanges, APIs, & Integrations
Alternative Payments Create Complexity That Demands IT

Medicare Shared Savings Program Accountable Care Organizations

Source: CMS 2016
Telemedicine, Summoned Medicine and New Models of Care Demand Technology

Forbes / Pharma & Healthcare

Doctors' Virtual Consults With Patients To Double By 2020

Bruce Japsen, CONTRIBUTOR
I write about health care and policies from the president's hometown
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We’ll review this ad to in experience in the future.
Help us show you better ads settings.

Forecast of Patients Using Telehealth in the United States
(Thousands of Patients)

Source: IHS InMedica February 2013

Medline publications about telemedicine and 5 chronic conditions

Publications per year

Source: “Twenty Years of Telemedicine in Chronic Disease Management — An Evidence Synthesis,” Journal of Telemedicine and Telecare, June 2012
Consumer Directed Health Plans Take Over And Patients Expect Better Service At Lower $
Data is Liberalized: Interoperability?
The Start of Something Big From Analytics To Machine Learning to CDS and Prescriptive Analytics

Source: CMS 2015
And We Still Have Headroom on IT Spend In Comparison to Others

Source: IT Key Metrics Data 2014, Gartner Benchmark Analytics
Business Models In Digital Healthcare

Revenue Models

• **Perpetual Licensing** and Maintenance

• **Per click** or Per procedure

• **Software as a Service (SaaS)** & Per Member Per Month (PMPM)

Client Targets

• Enterprise (**Provider, Payor, Employer**)  

• Consumer
Business Models In Digital Healthcare

Perpetual Licensing & Maintenance
- Aligns selling and implementation costs with revenue
- Can demonstrate rapid revenue ramp and
- Lumpy and unpredictable sales
- Requires maintenance re-up annually

Software as a Service and PMPM
- Aligns use with revenues
- Aligns with user or patient onboarding
- Couples nicely with cloud deployments
- Reduces upfront commitment by client

Per Click or Per Procedure
- Aligns use with revenues
- Requires conversion of customer each click unless “habit” results
- Requires training and implementation investment without known return
Business Models In Digital Healthcare

Hybrid Models

- **Enterprise HIT**: Platform fee upfront + SaaS “per application” fee
- **Digital Health**: SaaS platform fee + Per User Per Month (PUPM)
- **Consumer Health**: Per click fee with migration to SaaS model (upsell via paywall with added services and data network value)

As we will see, Digital Health and several “health IT” plays require human services as a component of the offering (lowers GM)
Business Models In Digital Healthcare Out of Scope (At Risk Models That Require Actuaries)

• Most small companies do not have the data to go “at risk” in any meaningful way

• Can focus on small (5%-20%) “at risk” payment models with clients to demonstrate value without betting the farm

• Should consider the “at risk” business a longer term goal

• “At risk” strategies for small companies play to the idea of “go big or go home”; Unfortunately going home is a probable option for lots of scenarios.
Terms

• **Bookings**: the value of contract between a customer and company (not frequently uniformly time based; examples are 3 vs 1 year contracts). Total Contract Value (TCV) and Annual Contract Value (ACV) are here.

• **Revenue**: recognized when a service is delivered or ratably over a contracted period

• **Monthly Recurring Revenue (MRR)**: the recurring revenue on a monthly level. It must exclude the services or one time revenue at a client.

• **Annual Recurring Revenue (ARR)**: the annualized MRR

• **Gross Profit**: Revenue minus the costs associated with the revenue
Terms

- **Lifetime Value of a Customer (LTV):** the present value of the future net profit from an individual customer gleaned from the duration of the engagement with the customer.

- **Cost to Acquire Customer (CAC):** the full cost of acquiring users, based on a per user calculation.

- **Weekly/Monthly/Daily Active Users (WAU, MAU, DAU):** The percent of users active on (a) weekly, (b) monthly, or (c) daily basis. The definition of active user is critical.

- **Net Promoter Score:** A measure of brand value and customer satisfaction. The number (out of 100) of individuals who score 9-10 minus those who score 0-6 on the question: “how likely are you to recommend X to a colleague”
Perpetual License and Maintenance

• Lifetime Value of a Customer (LTV)
• Cost to Acquire Customer (CAC)
• DAU/MAU and WAU/MAU
• Net Promoter Score
• Enterprise Sales Efficiency
• “Services” or Subscription Upsell Rates
Per Click & Per Procedure

- Lifetime Value of a Customer (LTV) = function of “Reorder Rate”

- Cost to Acquire Customer (CAC): function of Cost Per Lead, Lead Conversion Rate

- Gross Profit and Gross Margin

- Utilization (n/mo) is a function of “Reorder Rate”

- Average Order Size

- Net Promoter Score
SaaS and PMPM

- Lifetime Value of a Customer (LTV)
- Cost to Acquire Customer (CAC)
- LTV/CAC
- MRR (Monthly Recurring Revenue) and ARR (Annual Recurring Revenue)
- DAU/MAU and WAU/MAU
- Net Promoter Score
Guideline 1: LTV / CAC > 3

For every dollar spent on acquiring a customer, I get $3 back in gross profit (over time)

\[
\frac{\text{LTV}}{\text{CAC}} > 3
\]

*including customer churn; the average lifespan of a customer is 1/monthly churn
Guideline 1: LTV / CAC > 3

LTV can be estimated:

• Net Profit per Customer / Month (revenue per customer – associated costs)

• Monthly Churn

• LTV is estimated to be = Net Profit per Month / customer x (1/monthly churn)

• (blended) CAC can be estimated:
  as the delta between time periods(month) of sales and marketing spend divided by new customers

• LTV/ CAC is then straightforward

*including customer churn; the average lifespan of a customer is 1/monthly churn

The cost to acquire a customer is paid back within 12 months of the investment.

\[
\text{CAC} = \text{Sum of Incremental Costs Required Per Customer} \quad \text{To Convert to $}
\]

is greater than or equal to 1

\[
\text{1st Year Profit Per Customer} = \frac{\text{1st Year Profit Per Customer}}{\text{CAC}}
\]
Guideline 3: MRR Has 3 Parts (to Manage)

The three components of monthly recurring revenue are useful diagnostics to the health of the story:

- New Customer MRR
- Existing Customer Upsell MRR
- Current Customer MRR
- Churned MRR
Guideline 3: MRR Has 3 Parts (to Manage)

- **New Customer MRR**: A measure of the efficiency of ‘hunters’ (DS)
- **Existing Customer Upsell MRR**: A measure of efficiency of account mgmt (AM)
- **Current Customer MRR**: Measures of efficiency of customer success (avoid churn) (CSM)
- **Churned MRR**
G4: MAU, WAU, and DAU and DAU/MAU

“Growth hacking” is about creating users that are **highly engaged** and **sticky, happy** and **vocal** about it.

Twitter > 40%

Facebook > 50%

WhatsApp > 70%

Source: SEC Filings, Sequoia press release, earnings calls
G5 - Net Promoter Score®:

Using a 0-10 scale: “How likely is it that you would recommend [X] to a friend or colleague?

Source: [www.netpromoter.com](http://www.netpromoter.com) and Bain and Company 2015
NPS of Smartphones are 30+...

Source: www.netpromoter.com
Selling to Healthcare Enterprises

“You’ve got to be very careful if you don’t know where you are going, because you might not get there.” – Lawrence Peter “Yogi” Berra
Selling to (Healthcare) Enterprises

1. Play the cycle

2. Avoid the cycle

3. Convert the pilot (off-cycle)
Selling to Healthcare Enterprises

• “The Cycle”: A Sequenced Step of Gatekeepers + A Budget Process
  – Clinical Stakeholders
  – Financial and Operational Stakeholders
  – IT Stakeholders
  
  – “Process” – Meetings/Reviews/Decision Gates [6-18 months]

• “The Pilot”
  – Multiple Stakeholders
  – Can be funded “off cycle” with “grants” or “capital dollars”
  – Define outcomes “On Cycle” to Close a Legitimate Deal
  – Short term “proof of value” is essential in defining a pilot

10% of Pilots are Considered Successful *

* Source: Mittendorff analysis of aggregated data over 4 yrs
Selling to Healthcare Enterprises

- Discovery and Qualification
- Sell Value Proposition and Identify Champions
- Determine Process Steps, Decision Points, Information Requirements
- Manage Process
- Confirm Data Requirements, Decision Timing
- Negotiation and Close
- Implement

5 Leads In Pipeline → 12-24 Months → $400K SaaS Deal

$250K+ Sales and Marketing Costs

($) ($) ($) ($) ($) ($) ($) ($) ($) ($) ($)

1 Customer Signed

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One Rational Approach

1. Avoid (early) Complex IT Integrations and Workflow Changes
One Rational Approach

2. Show Value Early (Land and Expand); DESIGN AND NAIL THE PILOT
One Rational Approach

3. Use Pilot Data to Cross the Chasm (and **then** drive further integration or workflow change)
The “B2B2C” Challenge in Healthcare

1. Sell the healthcare enterprise
   a. *Sell the individual clinicians*

2. Sell the patient or end consumer to purchase or opt in, or decline opt out

3. Engage and retain the end consumer or patient

4. Demonstrate the value (ROI) to the provider or employer enterprise

5. Expand the contract to more patients or consumers in (1) and (2) …

   **This takes substantial time and money**
   (find a way to ‘go direct to the patient’)
The “B2B2C” Challenge in Digital Health

“Beware of the hunting license if there is no real proof of game” - anonymous
Digital Health and Clinical Outcomes

Clinically relevant outcomes are being achieved with digital health offerings, ushering in a new field of Digital Therapeutics.

Diabetes Control: 1.08 point average decline in HbA1c

Peer mentorship is a cost effective way of improving glycemic control. In a study done with participants with out-of-control diabetes, those who received weekly contact from a peer mentor had a statistically significant decrease in HbA1c levels by 1.08 points while those with usual care had no improvement.

Published:
Annals of Internal Medicine, 2012

(right) Source: Omada: Sepah et al. Translating the DPP into an Online Social Network. The Diabetes Educator 2014; 40(4): 435-443
Clinical and Operational Outcomes

1. Significant (statistically) Changes in **Biometrics**

2. Changes in Operational Metrics (**LOS and Throughput**)

3. **Avoidance of Cost** (Procedures, Interventions, or Diagnostic Odysseys)

4. **Increases in Revenue** (market expansion or price increase)

5. **Increases in Gross Profit**
Venture Valuations

A. Market Value or Comparables (Usually stage or multiples based)

B. Sum of Expected Value of Future Cash Flows

C. Returns Based Valuation

D. Who Knows?
Comparables (Market Value)

- SaaS companies are currently valued as a multiple of revenues (many are not profitable)

- The multiple of revenues is a function of:
  - **Revenue growth rate**
  - **Gross margin**
  - Defensibility
  - Revenue concentration
  - Average Contract Size
  - Upsell potential
  - Churn
  - Many other factors
### Valuation, Revenue Growth & Margin
#### Healthcare SaaS & others

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<td>Teladoc</td>
<td>51%</td>
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<td>Vocera</td>
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<td><strong>61.3%</strong></td>
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<td><strong>Median</strong></td>
<td><strong>21%</strong></td>
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<td><strong>Max</strong></td>
<td><strong>51%</strong></td>
<td><strong>7.6x</strong></td>
<td><strong>84.4%</strong></td>
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Source: CapitalIQ, Diana Hsieh and Robert Mittendorff analysis
### Valuation, Revenue Growth & Margin

#### SaaS Companies

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<th>Company</th>
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<th>EV/REV</th>
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<td>BOX</td>
<td>Box, Inc.</td>
<td>74%</td>
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<td>NOW</td>
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<td>47%</td>
<td>13.5x</td>
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<td>CSOD</td>
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<td>Marketo, Inc.</td>
<td>40%</td>
<td>5.5x</td>
<td>66%</td>
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<tr>
<td>WDAY</td>
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<td>68%</td>
<td>17.8x</td>
<td>66%</td>
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<td>HubSpot, Inc.</td>
<td>57%</td>
<td>10.1x</td>
<td>74%</td>
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<td>ZEN</td>
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<td>64%</td>
<td>9.9x</td>
<td>68%</td>
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<tr>
<td>TWOU</td>
<td>2U, Inc.</td>
<td>36%</td>
<td>7.5x</td>
<td>79%</td>
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<td>Athenahealth, Inc.</td>
<td>23%</td>
<td>7.1x</td>
<td>60%</td>
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<tr>
<td>BV</td>
<td>Beazavolce, Inc.</td>
<td>14%</td>
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<td>CSLT</td>
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<td>65%</td>
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<td>CVT</td>
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<td>FLTX</td>
<td>Fiserv Inc.</td>
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<td>JWE</td>
<td>Jive Software, Inc.</td>
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<td>LNKD</td>
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<td>LPSN</td>
<td>LinkedIn Corporation</td>
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<tr>
<td>LOGM</td>
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<td>1.5x</td>
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<tr>
<td>MRIN</td>
<td>Marin Software Incorporated</td>
<td>17%</td>
<td>10.0x</td>
<td>77%</td>
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<tr>
<td>MDSO</td>
<td>Medidata Solutions, Inc.</td>
<td>17%</td>
<td>6.9x</td>
<td>77%</td>
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<tr>
<td>MB</td>
<td>MINDBODY, Inc.</td>
<td>45%</td>
<td>4.9x</td>
<td>63%</td>
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<tr>
<td>MOBL</td>
<td>MobileIron, Inc.</td>
<td>13%</td>
<td>1.4x</td>
<td>81%</td>
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<tr>
<td>NEWR</td>
<td>New Relic, Inc.</td>
<td>75%</td>
<td>14.6x</td>
<td>80%</td>
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<td>N</td>
<td>NetSuite Inc.</td>
<td>53%</td>
<td>8.9x</td>
<td>67%</td>
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<tr>
<td>PPPT</td>
<td>Proofpoint, Inc.</td>
<td>36%</td>
<td>9.8x</td>
<td>68%</td>
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<tr>
<td>QLYS</td>
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<td>5.9x</td>
<td>79%</td>
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<tr>
<td>RP</td>
<td>RealPage, Inc.</td>
<td>16%</td>
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<tr>
<td>SHOP</td>
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<td>95%</td>
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<td>SPSC</td>
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<td>68%</td>
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<td>TXTR</td>
<td>Textura Corporation</td>
<td>38%</td>
<td>5.8x</td>
<td>83%</td>
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<tr>
<td>ULTI</td>
<td>The Ultimate Software Group, Inc.</td>
<td>22%</td>
<td>8.8x</td>
<td>61%</td>
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<td>VEEV</td>
<td>Veeva Systems Inc.</td>
<td>49%</td>
<td>11.1x</td>
<td>63%</td>
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<tr>
<td>WIX</td>
<td>Wix.com Ltd.</td>
<td>53%</td>
<td>3.9x</td>
<td>83%</td>
</tr>
</tbody>
</table>

**Average** 37%  6.8x  70%
**Median** 35%  6.7x  68%
**Max** 95%  17.8x  87%

Source: CapitalIQ, Diana Hsieh and Robert Mittendorf analysis
HealthIT and Digital Health Comps (Mkt Value)
(very low R squared = job security)

Enterprise Value / Revenue vs. % Revenue Growth (yoy)

y = 6.2008x + 2.175
R² = 0.1898

Enterprise Value / Revenue vs. % Gross Margin

y = 6.5248x - 0.5202
R² = 0.1412

Source: CapitalIQ, Diana Hsieh and Robert Mittendorff analysis
Present Value of Future Cash Flows

• The discounted sum of expected future cash flows can be used to value an asset.

• In practice, for venture investments, the number of parameters and assumptions is so large and variable that this method provides limited utility (although many of us do attempt it).

• For the purposes of this talk, methods of calculating the net present value of future cash flows of an asset are out of scope.
Returns Based Valuation

- **Series A**: usually the first “institutional money” with $5M-$15M in the round
  - Investors expect 10-20*x return
  - e.g.: A $20M post round would exit at $200M+

- **Series B**: 2nd institutional round with $15M- $30M in the round
  - Investors expect 5-12*x return
  - e.g.: A $50M post round would exit at $250M+

- **Series C**: 3rd institutional round with $20M - $40M in the round
  - Investors expect a 3-6*x return
  - e.g.: A $100M post round would exit at $300M+

*Returns ranges are highly dependent on a number of factors, sectors, and firm investment philosophy*
Consider Company A

• SaaS Offering
• Total Addressable Market of Over 2K Hospitals
• First Sale to Department or Function at $50K in ARR
• Realizable “proof of value” ROI in 3 months
• No integration needed at first; able to achieve results with minimal data
• Little change in clinical or operational workflow on first placement
• Upsell and expansion potential to enterprise platform with $500K ARR potential per hospital
• Data network effects from machine learning
Consider Company B

- Appliance or On Prem Offering
- Total Addressable Market limited to academic medical centers
- First Sale to C suite at $400K in ARR
- Realizable “proof of value” ROI takes 1-2 years
- Integration with live HL7 feeds and data warehouse required at outset
- Significant change management involving multiple clinical departments
- Limited expansion potential (all or nothing scenario)
- potential per hospital
- No learning or customization over time
Don’t Boil the Ocean: Focus on Fast Time to Value and Then Upsell

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
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<tbody>
<tr>
<td>Ease of deployment</td>
<td>★★★★★</td>
<td>★★★★☆</td>
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<td>Market Size</td>
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<td>★★★★☆</td>
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<tr>
<td>Time to First Sale</td>
<td>★★★★★</td>
<td>★★★★☆</td>
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<tr>
<td>Time to Proof of Value</td>
<td>★★★★★</td>
<td>★★★★☆</td>
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<tr>
<td>Ease of Integration</td>
<td>★★★★★</td>
<td>★★★★☆</td>
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<td>Degree of Op Change</td>
<td>★★★★★</td>
<td>★★★★☆</td>
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<tr>
<td>“Trojan Horse” L&amp;E Potential</td>
<td>★★★★★</td>
<td>★★★★☆</td>
</tr>
<tr>
<td>Data Network Effects</td>
<td>★★★★★</td>
<td>★★★★☆</td>
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<tr>
<td>Sales Velocity</td>
<td>★★★★★</td>
<td>★★★★☆</td>
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<tr>
<td>LTV / CAC</td>
<td>★★★★★</td>
<td>★★★★☆</td>
</tr>
<tr>
<td>Enterprise Value</td>
<td>★★★★★</td>
<td>★★★★☆</td>
</tr>
</tbody>
</table>
Take Aways: Top 10

1. Mid – Big ($300-$1B) Markets of Relevance to Customers are Key
2. SaaS Offerings are Valuable; be creative with this business model
3. Clinical and Operation Value Propositions that can be proven are important
4. Time to “Proof Of Value” < 3 mo is very nice
5. A pathway to LTV/CAC > 3 is important
6. WAU or DAU / MAU of > 0.3 is valuable
7. A Net Promoter Score of 25% or above invites a smile
8. A Land and Expand Product Offering that can 3-5x the MRR /client is good
9. Data Network Effects (BI and Machine Learning) are valuable
11. Focus on customer success to drive NPS (which will lower effective marketing costs)
Questions

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• @doctorrem