

Health & Comfort AHIA

EY Consulting

Health Sciences & Wellness





Our Team

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Jake Joseph
jakejose@iu.edu



JJ Bogner
jjbogner@iu.edu



Priya Huddar
phuddar@iu.edu



Vivi Armacost
varmacos@iu.edu

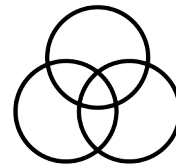
Agenda

1. Situation
2. Recommendations
3. Team Structure and Implementation
4. Finances
5. Risks and Mitigation
6. Conclusion

Advance H&C's revenue growth by responding to changes in the way people interact with their animals in the age of technology



H&C is looking to drive growth in its Animal Health division. In response to macro industry drivers, the division has created the Animal Health Insights and Analytics (AHIA) group and has invested in smart health monitoring devices.



AHIA is tasked with creating a unified data platform from several data sources of acquired companies. They have to ensure proper data management while creating new revenue streams through analytics for H&C.



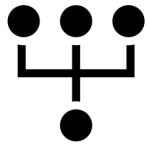
What should AHIA's strategy be towards building data-driven health products and how would they drive the product roadmap?

Situation

Recommendations

Team Structure & Implementation

Financials & Risk



H&C has created the AHIA branch of their firm to improve the data collection of their newly purchased smart devices and find a new analytical approach to an outdated business model.

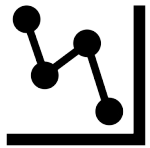
AHIA must find a method which allows the branch to properly aggregate data in an efficient manner and develop a practice to properly analyze this data so that it can be consumed by H&C along with its customers.

How should H&C equip AHIA to adequately collect data rapidly so that it can be analyzed in a fashion that improves the overall performance of the entire company?



Use Data Virtualization to pool data from multiple sources and display insights on SaaS

- Connect all data sources onto single TIBCO data virtualization platform
- Perform advanced analytics on aggregated data to generate insights like abnormal animal feeding



Provide health monitoring and nutrition insights to owner

- Provide features like monitoring health of groups of animals through SaaS
- Send alerts to owner via SaaS, helping prevent diseases



Suggest relevant H&C products to buy for animal's condition

- Use insights derived to recommend required drugs/health products from H&C
- Increase revenue growth through targeted sales

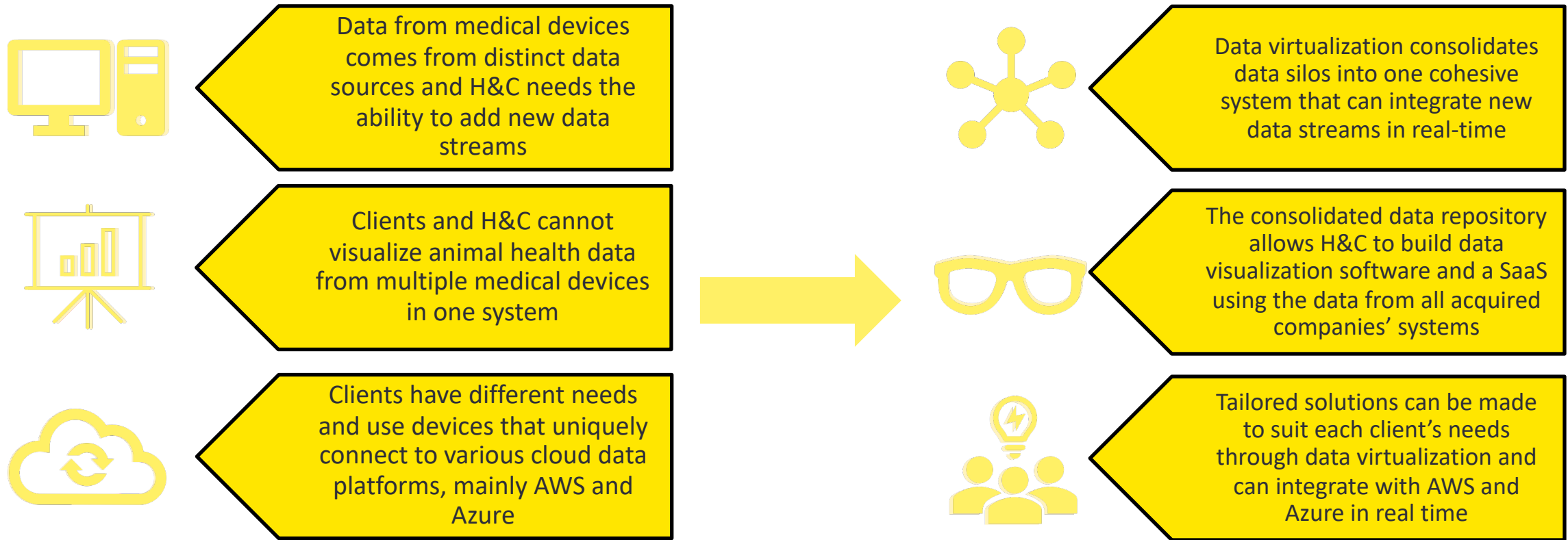


Recommend other smart devices based on previous purchases

- Use previous device purchases and animal statistics to recommend new devices
- Offer coupled device, nutrition and medical solutions

Use phased Agile approach to develop a consolidated data repository using data virtualization

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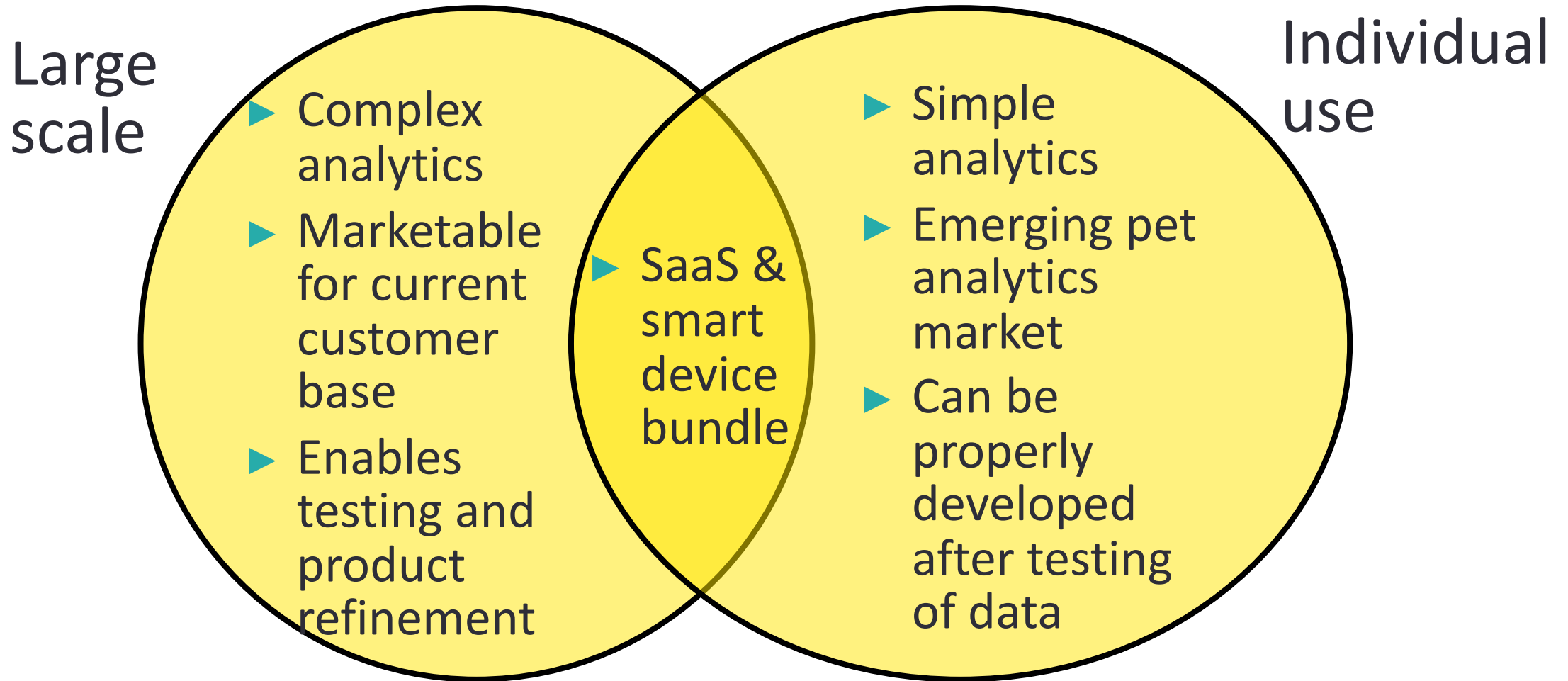
Agile sprints enable H&C to connect external client systems one at a time to the TIBCO platform and will allow H&C to create an MVP that will be tested with a client subset before full SaaS system is rolled out

Situation

Recommendations

Team Structure & Implementation

Financials & Risk



Large-scale Use

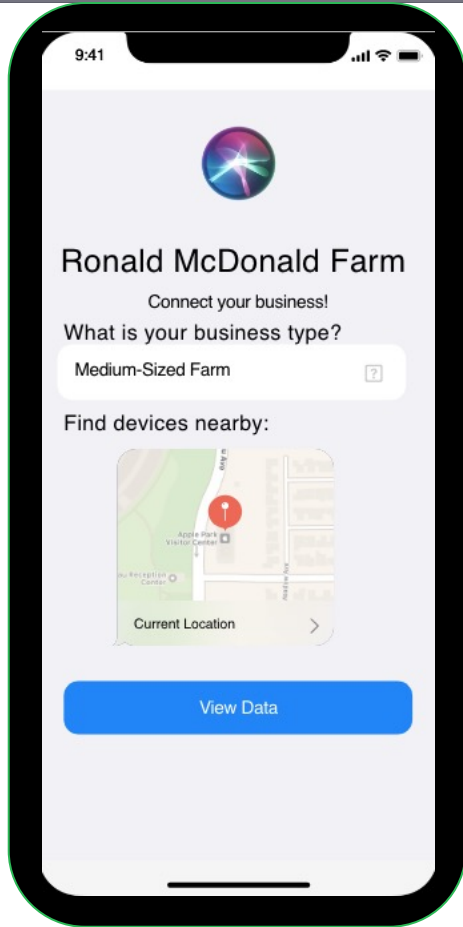
- ▶ Includes farmers, manufacturers of animal products
- ▶ Form the bulk of revenue for H&C and guarantee steady yearly income
- ▶ This category within the US would be the target of our MVP
- ▶ Complex analytics needs targeted towards health and productivity of animal – by pen, shelter etc.
- ▶ Devices and software will be sold bundled together under a subscription-based model

Individual Use

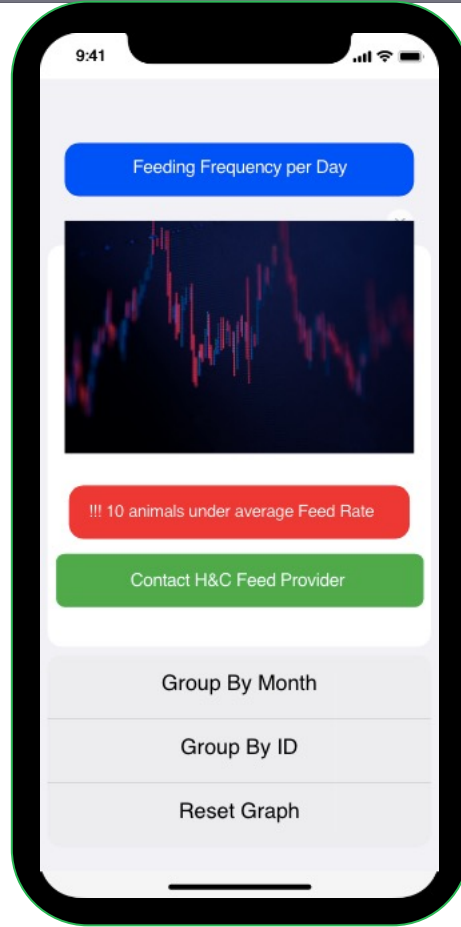
- ▶ Includes pet owners
- ▶ Individual revenue low, but fast-growing market
- ▶ Provides an incremental revenue stream
- ▶ This category will be targeted in subsequent SaaS releases
- ▶ Simpler analytics needs focused on pet's health, mood, interaction of pet and owner
- ▶ Devices and software will be sold bundled together under a subscription-based model

Utilize a simple user interface for easy-to-understand front end customer interaction and product bundle use. (Mid-sized farm/large-scale example)

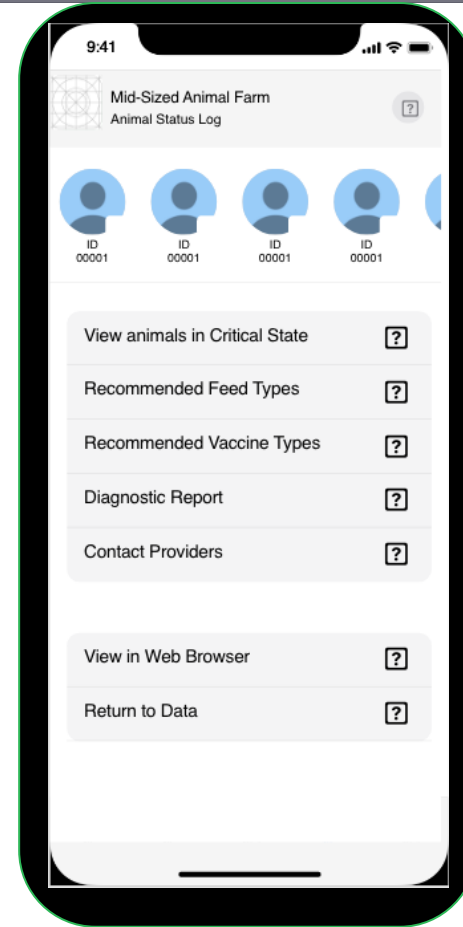
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User fills in business information and connects devices



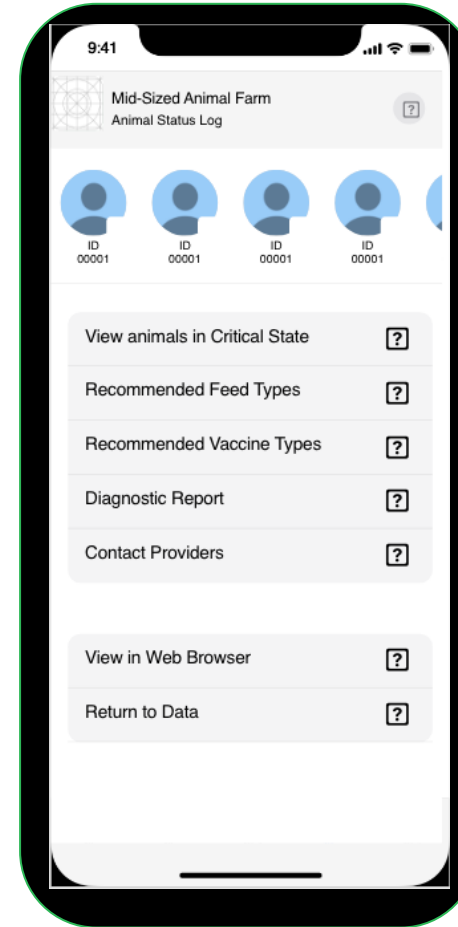
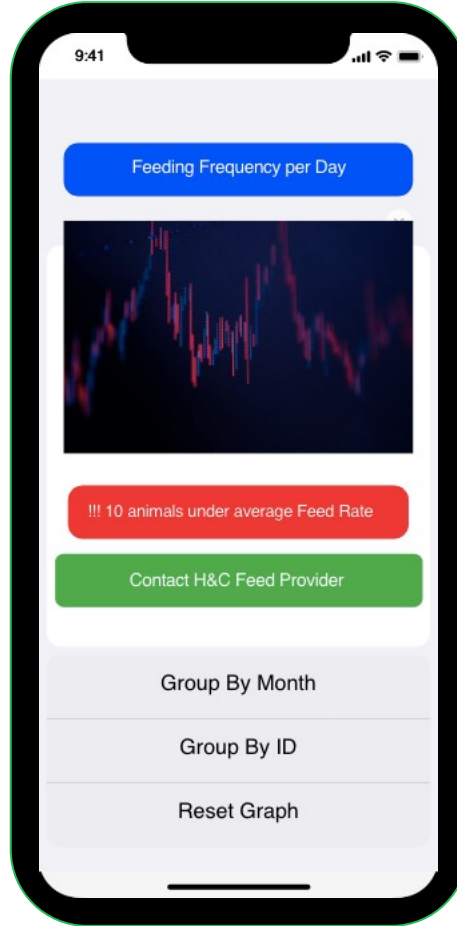
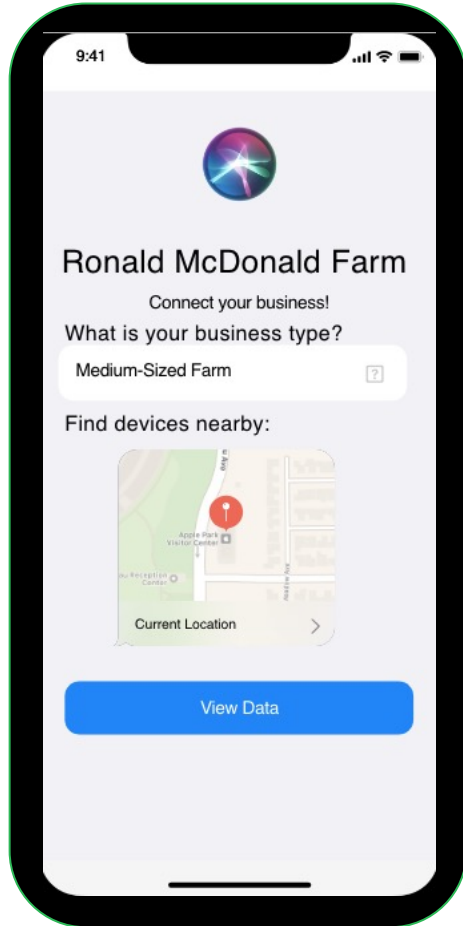
Data visualization becomes available with grouping capabilities and alerts



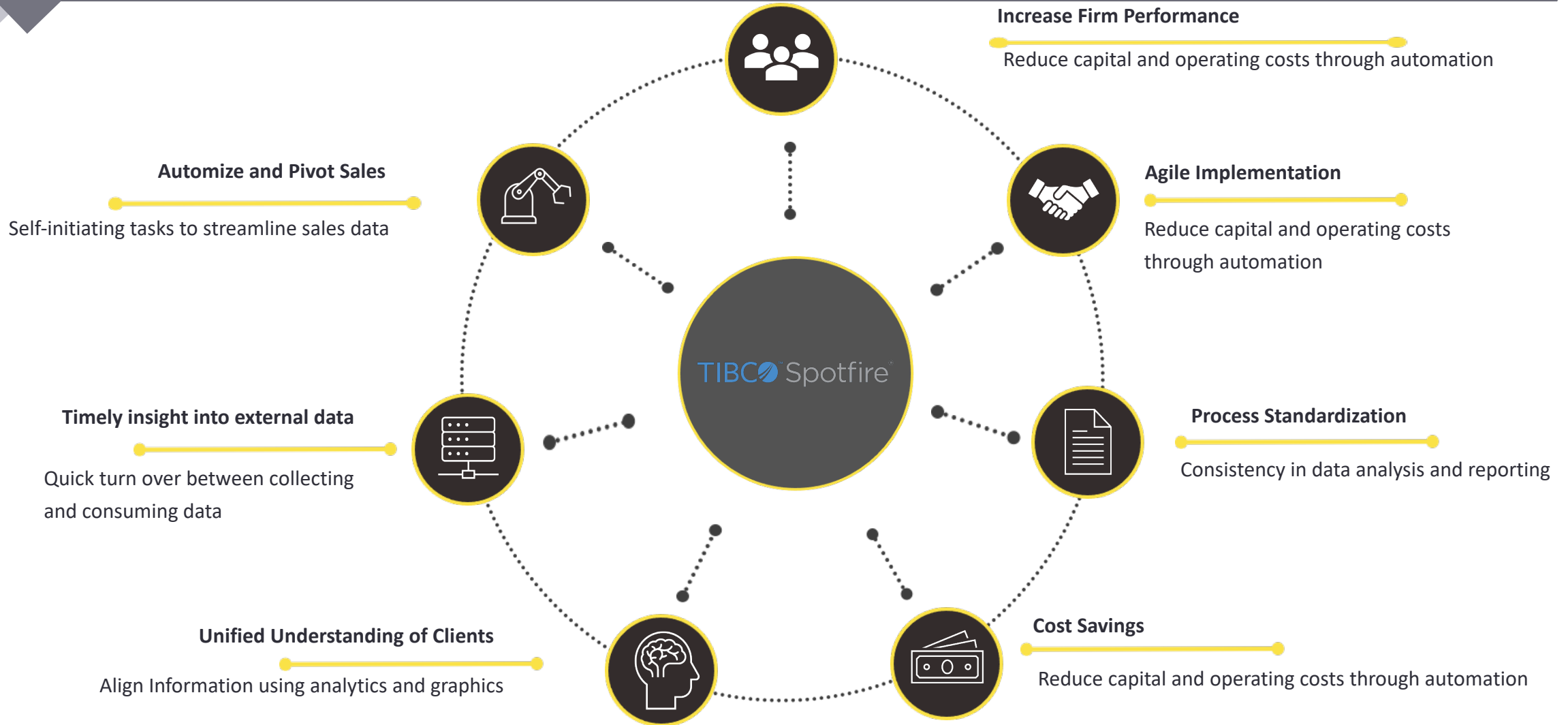
Individual device information, H&C care options, and diagnostic reports become available.

Utilize a simple user interface for easy-to-understand front end customer interaction

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Integrate H&C's current sales tracking system into data virtualization platform to derive insights on product sales and customer needs



Situation

Recommendations

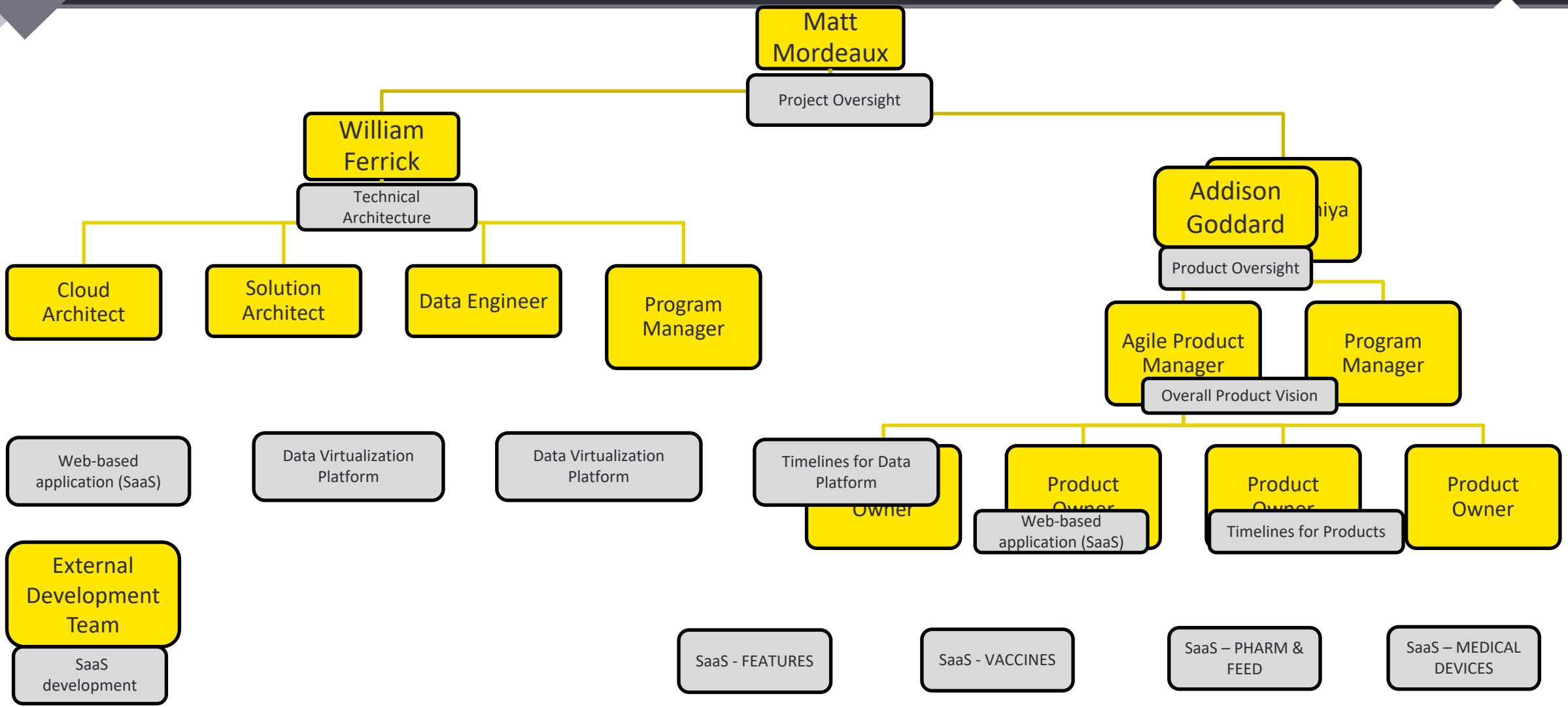
Team Structure & Implementation

Financials & Risk

Data platform and product teams work collaboratively to ensure platform usability, data security and system accuracy



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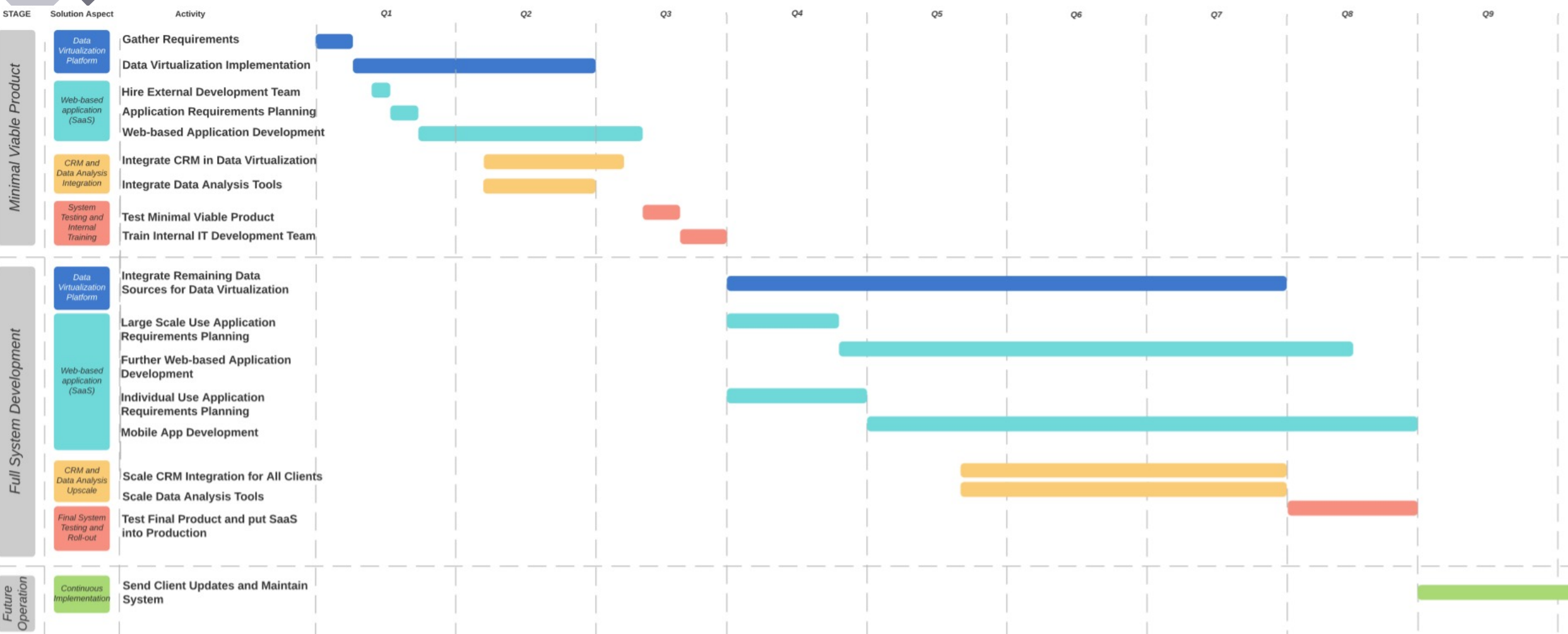


Situation → Recommendations → **Team Structure & Implementation** → Financials & Risk

H&C should implement recommendations in a timely manner to expand market share and enhance traditional business model



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Situation

Recommendations

Team Structure & Implementation

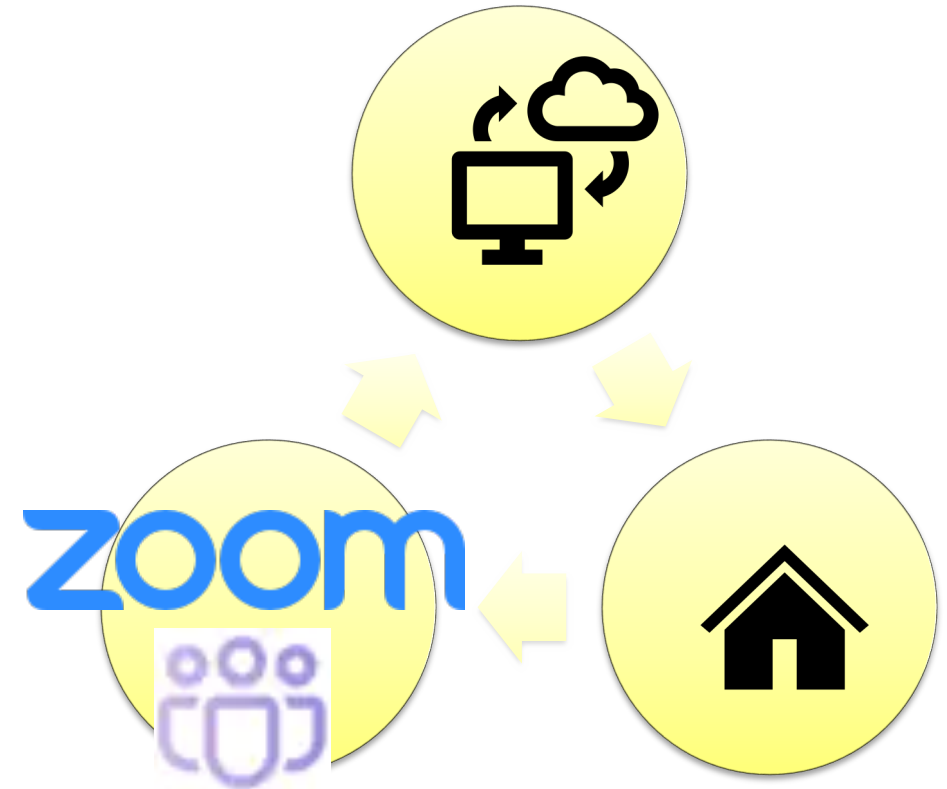
Financials & Risk

Success in the modern age of work

Data Virtualization software allows for H&C to manage data without requiring on-site data center configuration

Utilization of collaboration technologies will support team communication & productivity (Microsoft Teams, Zoom, etc.)

Virtual workspace infrastructure including company VPN's, virtual desktops, and version control enhance at-home workflow



Microsoft Zoom, Inc.

**340%
ROI**
Based on study
by Forrester
Research

Shah, Anish. "The Total Economic Impact Of Cisco Data Virtualization"

MVP Cost Summary:
Implementation: ~\$4,000,000
EY Engagement: ~\$500,000
External Development(SaaS): ~\$500,000
Market Research: ~\$1,000,000

Total Estimated Cost: \$6,000,000

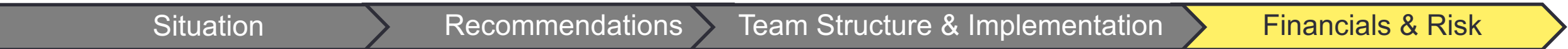
"Fees & Rates." *Consultancy*, Consultancy-Me Frederiksen, Lee, and Kelly Waffle. "Cost and Benefits of Market Research." *Hinge Marketing*, Hinge Research Institution, 16 Aug. 2021,

**1000% Reduced Cost on
database management
compared to ETL**

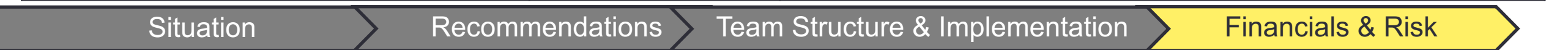
5 Year Cost Summary:
MVP Estimation: \$6,000,000
Platform Scaling : \$ 10,000,000
Maintenance: \$4,000,000
Employee training cost: \$100,000

Total Estimated Cost (5yr): \$20,100,000

Blakeley-Gray, Rachel. "What Is the Cost of Training Employees?" *Patriot Software*, 25 Jan. 2021



Risks	Risk Profile	Mitigation Strategies
<p>Combining a large amount of data from varying sources is complex and could lead to missed deadlines. A slowed implementation process increases costs and delays other project goals.</p>		<p>Given that H&C has considerable investments in the cloud space (AWS, Azure), managing data in this area should be relatively seamless. The complexity of the virtualization will be the largest endeavor, so EY managers will create structured project proposals and will revise project timelines as needed.</p>
<p>Customer Data Privacy laws vary across nations and states within certain nations. H&C may be heavily fined for any violations of law.</p>		<p>We use Differential Privacy algorithms when storing our data. We have comprehensive privacy statements and give customers a chance to read and accept them before using our services.</p>
<p>Potential customers of the SaaS products we would like to develop could be unreceptive to the software we are providing due to varying degrees of technical ability.</p>		<p>Providing extensive documentation and technical support for the custom services we develop will be essential to the success of our new products. An emphasis on user friendly interfaces paired with a strong support infrastructure will cultivate the best possible client experience.</p>



Benefits

- Consolidate data sources into 1 platform
- Data products bring new streams of revenue
- Targeted marketing boosts sales of existing products

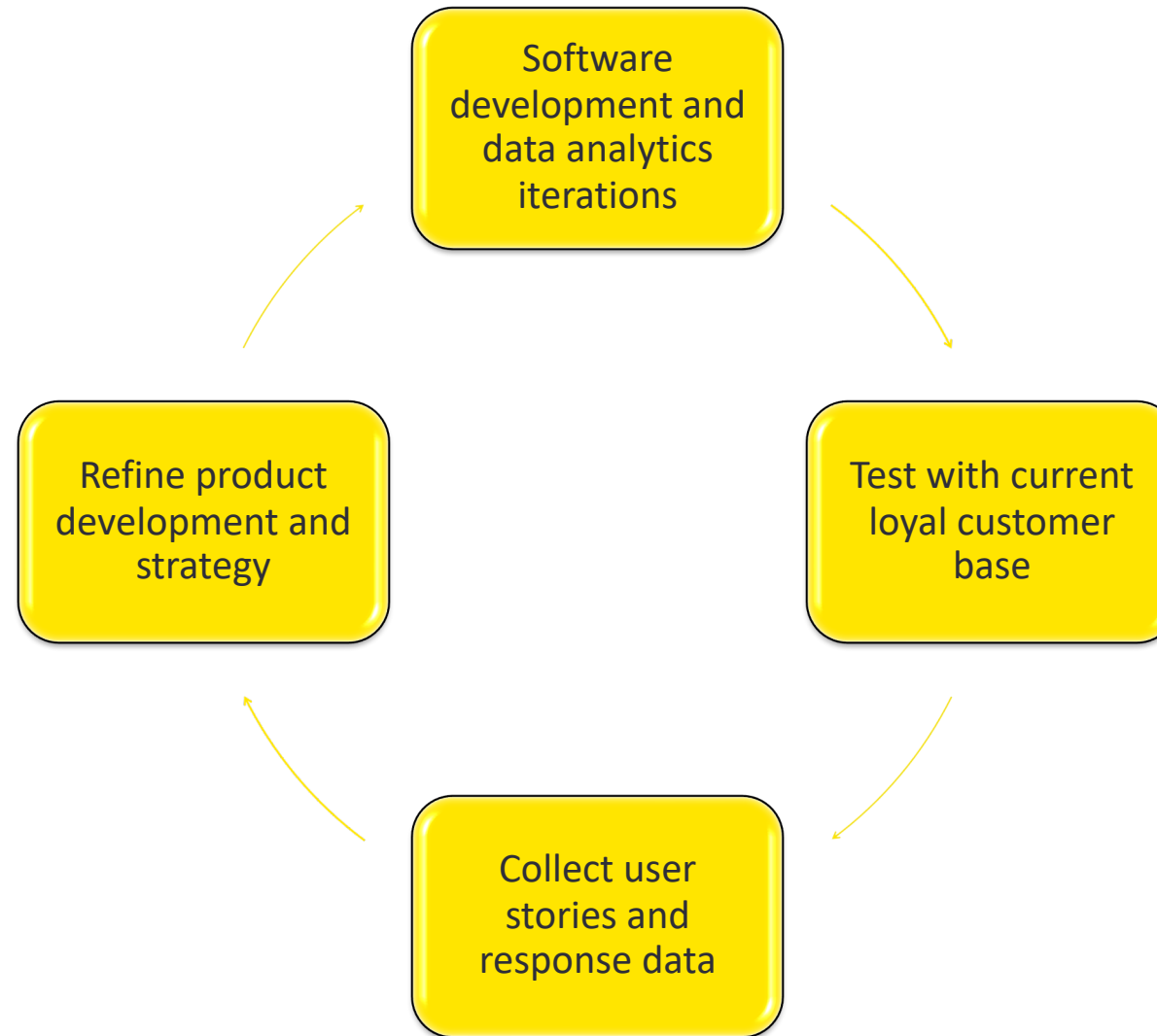
Financials

- ROI = 346% in 3 years of project start
- Investment (5 year) = \$20,100,000
- Reduced data handling costs

Timeline

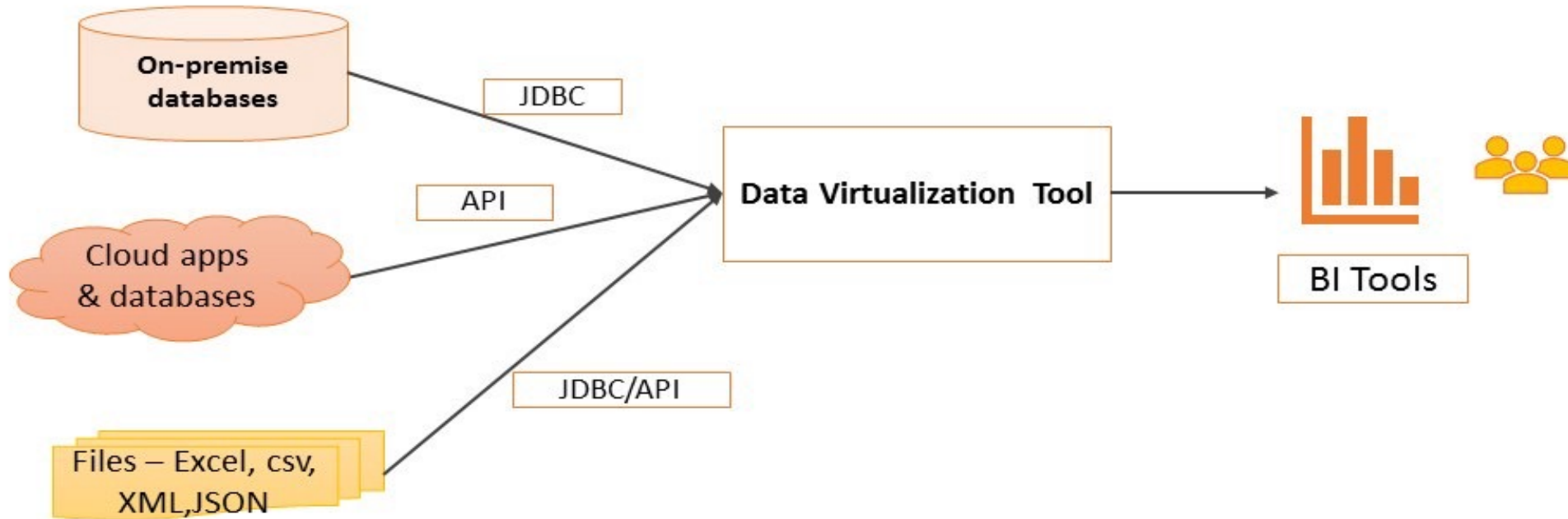
- MVP = 9 months
- Full-fledged SaaS implementation = 2 years

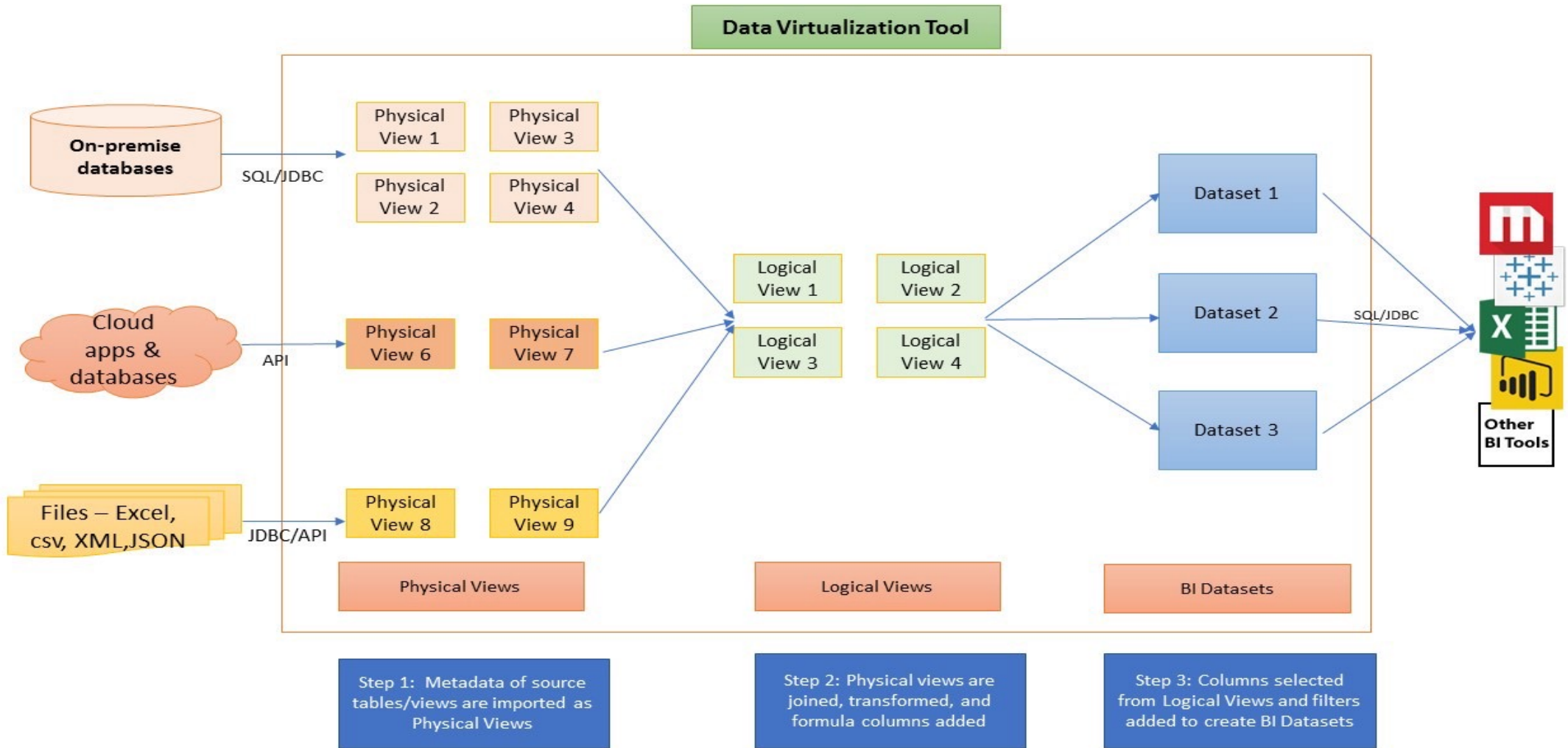
<p>Data Virtualization</p> <p>What is Data Virtualization?</p> <p>Chart 1</p> <p>Chart 2</p> <p>Platform Comparison</p>	<p>General</p> <p>Compliance Matrix</p> <p>User Stories</p> <p>Detailed Activities List</p>	<p>SAAS</p> <p>Testing</p> <p>BI/A in Custom Software</p>
<p>Security & Privacy</p> <p>Using customer data without compromising privacy</p> <p>Differential Privacy</p>	<p>Team Structure</p> <p>Platform</p> <p>Product</p> <p>SaaS</p>	<p>Cases/Financials</p> <p>Bowdoin</p> <p>Bowdoin 2</p> <p>Forrester</p> <p>Forrester 2</p> <p>Market Research</p>



- "**Data virtualization** software acts as a bridge across multiple, diverse data sources, bringing critical decision-making data together in one virtual place to fuel analytics **virtualization** software acts as a bridge across multiple, diverse data sources, bringing critical decision-making data together in one virtual place to fuel analytics." ~ TIBCO 2021 <https://www.tibco.com/reference-center/what-is-data-virtualization>
- Offers firms the ability to combine data sets from a variety of sources and organize it in a way that is most suitable for the needs of the business
- Data can be connected to new source through API's and SQL Querying
- Allows for connecting data to Business Analytics tools (Power BI, Tableau, etc.)
- Services: TIBCO, Denodo
- TIBCO pairs well with AWS, Google Cloud, Microsoft Azure

Data Virtualization





TIBCO

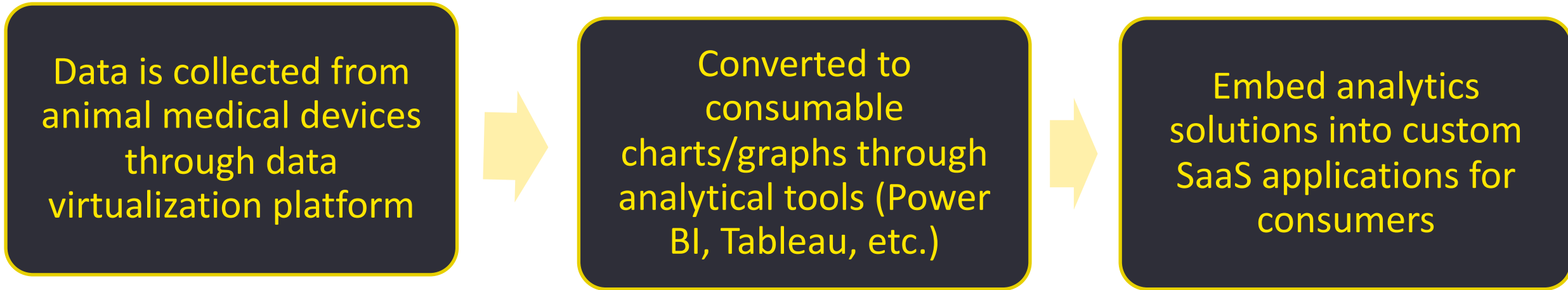
- Cloud
- IoT
- Big Data
- CRM Capabilities

Donedo

- AI
- Cloud
- Self-service Analytics
- CRM

IBM Data Pak

- Cloud
- Automized Analytics
- CRM



Compliance Matrix



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Requirement	Compliance Status	Slide Numbers(s)	Slide Reference
Strategy for AHIA and rollout of Animal Health data products	Yes	5,6,7,8	
How would you approach this engagement?...	Yes	9	<u>9. Gantt Chart</u>
Thoughts on structuring the overall program (work streams, projects, etc.)	Yes	6	<u>6. Using phased Agile...</u>
Work products/deliverables	Yes	7	7. Sell bundled smart devices...
Optimal operating model assessment (cx, process)	Yes		
Risks & Controls	Yes	11	11. H&C should consider potential risks...
Delivering engagement remotely	Yes		

Requirement	Compliance Status	Slide Numbers(s)
How would the team be structured/ how much will engagement pricing be determined?	Yes	9,12

Using customer data to drive business without compromising on privacy and remaining compliant



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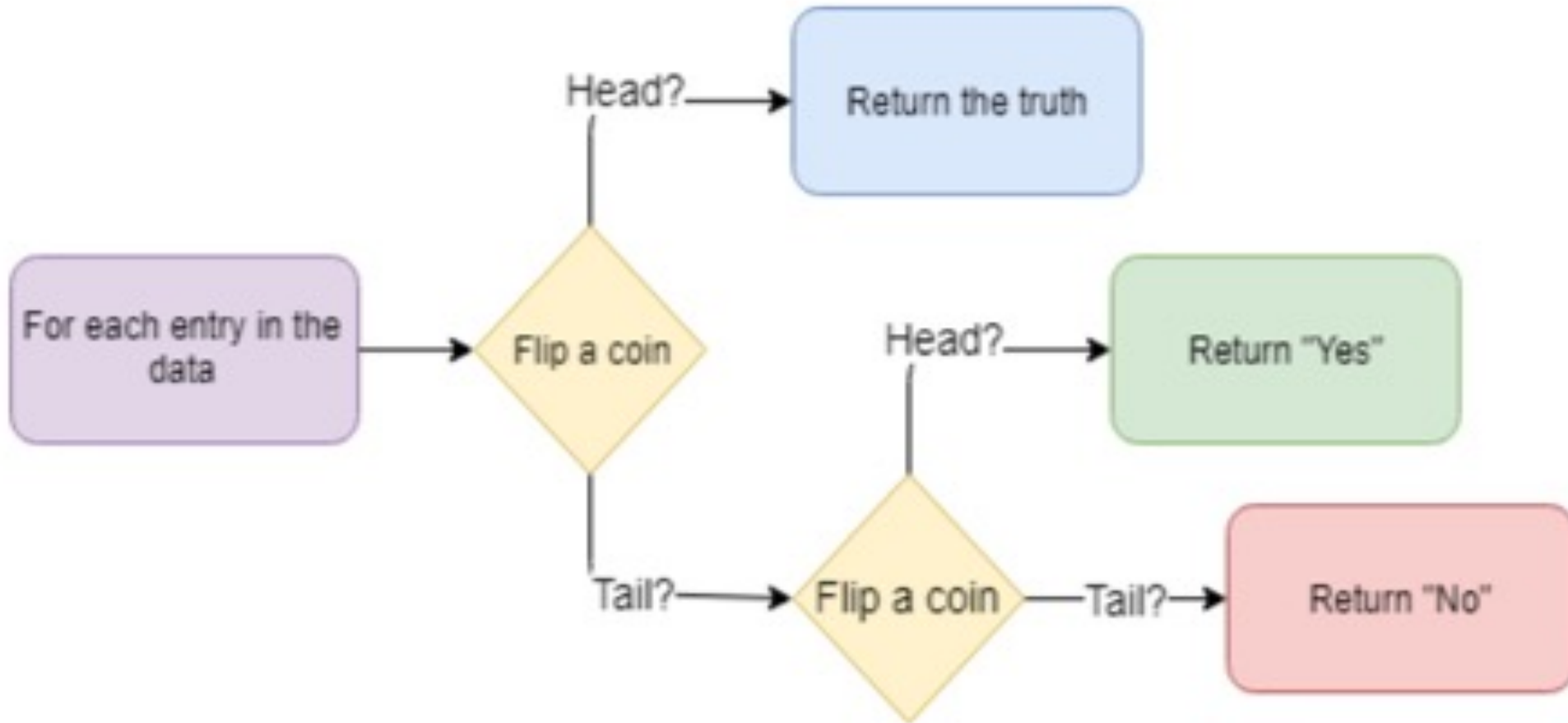
Device data is captured through an agreement of product with the device manufacturing company. This data does not have any sensitive customer data

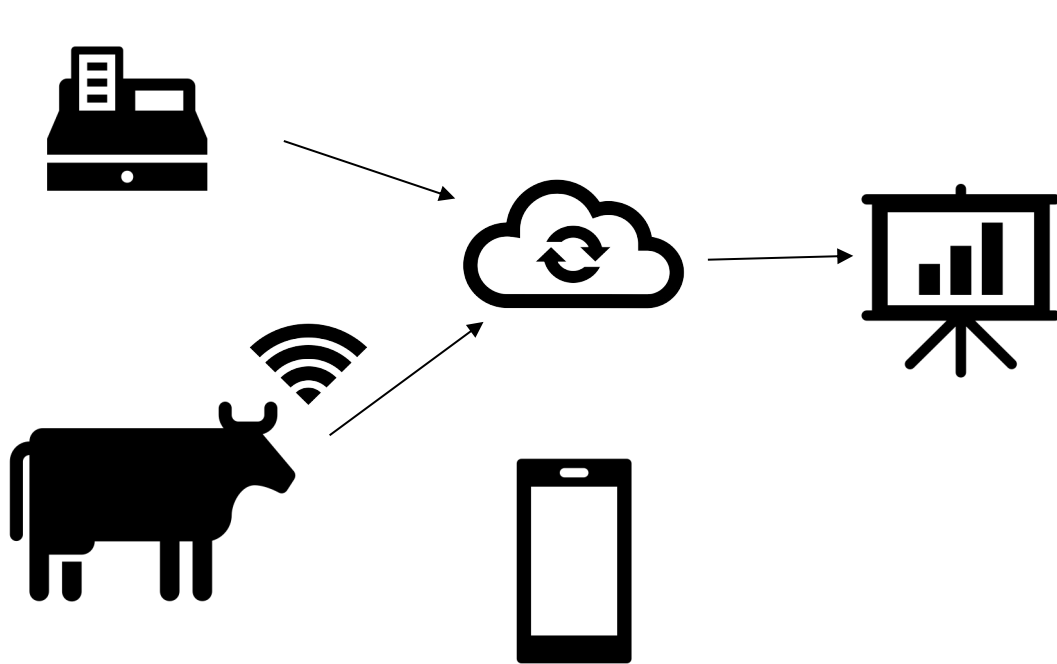
Customer data is accessed and stored through Differential Privacy algorithms, i.e. the data is transformed through a randomized function (such as a coin toss or Laplace distributions in large datasets) before being stored

Companies that are considered as leaders in the privacy space (like Apple) currently use Differential Privacy to store data for analysis

We clearly lay out privacy policies of our products (and have customers agree to them) to ensure that we are compliant with the privacy policies of the state and nation in which product is bought. We will consult a legal team on this matter

Source: <https://towardsdatascience.com/understanding-differential-privacy-85ce191e198a>





Farm Owner

As a farm owner, I want to use smart devices to track the health of my animals easily, so that I can focus on the well-being of individual animals.

Acceptance Criteria

- ▶ User connects H&C smart device to H&C application on smart phone
- ▶ User receives alerts on declining health of animals to smart phone

Sales Associate

As a sales associate at H&C, I want to easily access aggregated information about sales history, so that I can more effectively campaign for our products.

Acceptance Criteria

- ▶ User logs into CRM with verified credentials
- ▶ User searches for information within the CRM regarding specific product, company, or location criteria and receives visualization of information

Team Member	Reports to	Task
William Ferrick, Platform Lead	Matt Mordeaux, CIO	Technical Architecture, Migration of old platforms, overall co-ordination with product team
Cloud Architect	William Ferrick	Design the SaaS architecture
Solutions Architect	William Ferrick	Design the Data Virtualization architecture
Data Engineer	William Ferrick	Build Data virtualization platform
Data Scientist	William Ferrick	Perform Data visualization
Program Manager	William Ferrick	Co-ordinate efforts between platform architecture team

Team Member	Reports to	Task
Elaine Nathiya, Director of Product	Addison Goddard, Head of Product	Drive overall product vision
Product Owner 1 – SaaS	Elaine Nathiya	Own SaaS features and upgrades
Product Owner 2 - Vaccines	Elaine Nathiya	Own vaccine sales through analytics
Product Owner 3 – Pharmaceuticals & Feed additives	Elaine Nathiya	Own pharmaceutical sales through analytics
Product Owner 4 - Medical Devices	Elaine Nathiya	Own medical device sales through analytics
Program Manager	Elaine Nathiya	Co-ordinate product timelines across divisions
Agile Product Manager	Elaine Nathiya	Make product roadmaps in agile development environment

- ▶ We recommend hiring an external team of software developers for initial SaaS development
- ▶ ~\$100,000 per year per developer
- ▶ Project would require:
 - ▶ Frontend Engineer
 - ▶ Backend Engineer
 - ▶ QA Engineer
 - ▶ Business Analyst

https://www.glassdoor.com/Salaries/software-engineer-salary-SRCH_KOO,17.htm

<https://tsh.io/blog/software-development-team-structure/>

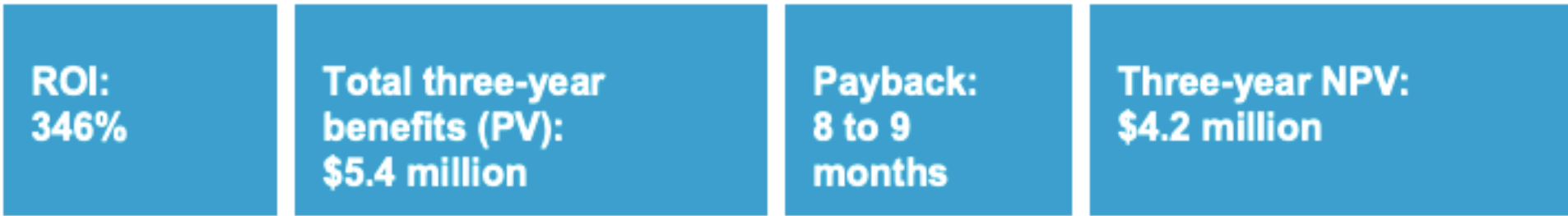
- ❑ \$2 Million cost for traditional database expansion
- ❑ \$200,000 Total Cost
- ❑ \$150,000 for storage
- ❑ \$50,000 for software
- ❑ 1/10 the projected cost of data expansion



<https://www.bowdoin.edu/about/index.html>

Bowdoin Numbers	H&C Comparison
<p>Number of people on campus is ~ 2,000 3 devices per person = 5,000 users Storage cost per user = \$30 Software Cost per user = \$10 Total Cost per user = \$40</p>	<p>If H&C has 100,000 users in the first year Total cost per user = 100,000 * \$40 = 4,000,000 Software cost = \$1,000,000 Storage Cost = \$3,000,000</p>

► Forrester Research provided an objective study on the effectiveness on Cisco Data Virtualization software in various business type



Ref.	Metric	Calculation	Initial	Year 1	Year 2	Year 3	Total	Present Value
A1	Number of large projects / year			2	2	2		
A2	Average project cost: large projects			\$1,000,000	\$1,000,000	\$1,000,000		
A3	Number of medium projects / year			5	5	5		
A4	Average project cost: medium projects			\$500,000	\$500,000	\$500,000		
A5	Number of small projects / year			8	8	8		
A6	Average project cost: small projects			\$250,000	\$250,000	\$250,000		
A7	Percent project cost avoidance due to data virtualization			5%	7%	10%		
At	Project cost avoidance	$(A1 \cdot A2) + (A3 \cdot A4) + (A5 \cdot A6) \cdot A7$	\$0	\$325,000	\$455,000	\$650,000	\$1,430,000	\$1,159,842
	Risk adjustment		90%					
Atr	Project cost avoidance (Risk-Adjusted)		\$0	\$292,500	\$409,500	\$585,000	\$1,287,000	\$1,043,858

- ▶ MVP development
 - ▶ **EY consultants and management engage in discussion** to determine 100-200 target farmer clients for **minimal viable product**
 - ▶ **Install TIBCO data virtualization software** and work with the solution architect and data engineer to connect data sources for target farmers that utilize vaccine technologies
 - ▶ **Hire external development team** to work with cloud architect and internal agile team (product owners) **to develop web-based application (SaaS) for farmers** to monitor animal health data, specifically in relation to vaccines
 - ▶ **Integrate H&C current CRM into data virtualization software.** Work alongside the solution architect to successfully integrate.
 - ▶ **Integrate data visualization programs into the data virtualization software.** Work alongside the data scientist.
 - ▶ Test MVP and roll out to target farmers.
 - ▶ Organize internal IT improvement/development team and train them on the web-based application to ensure that they can sustain the expansion of the SaaS to the entire client base.
- ▶ Full implementation
 - ▶ **Connect the remaining data sources** of ALL clients **into the TIBCO virtualization software.**
 - ▶ **Internal development team expands the web-based application** to include capabilities for all clients and device types.
 - ▶ **Product owners gather requirements for individual pet owner health data visualization needs.**
 - ▶ **Scale the CRM integration and data visualization software** to meet the needs of additional clients added to the virtualization system.
 - ▶ **Internal development team creates mobile app** for individual pet owner device data monitoring.
 - ▶ Test full SaaS solution to ensure functionality for entire client base.
 - ▶ Roll out production system.
 - ▶ Continue improving and maintaining system.

- ▶ Market Research per study (Large firm) ~ \$60,000
- ▶ 15 product areas researched
- ▶ $\$60,000 * 15 = \$900,000$

- ▶ Recommended \$1 million in market research