INTRODUCTIONS

MEET OUR SPEAKERS

Gerry Blass
*CEO,
ComplyAssistant*

Jack Hueter
*CEO & Owner,
Digital Healthcare
Consulting*

Richard Kerr
*Administrator,
Clinical
Applications
Management
LVHN Information
Technology*

Sabina Zafar
*Founder & CEO,
AI Cloud
Consulting*

**Martin von
Grossmann**
*Senior Consultant,
ComplyAssistant*

PLEASE SAVE QUESTIONS TO THE END OF THE PANEL DISCUSSION

AI Comfort Level

How old is AI?

Acronyms

ML -   MACHINE LEARNING

LLM - LARGE LANGUAGE MODEL

NLP - NATURAL LANGUAGE PROCESSING

ANI - ARTIFICIAL NARROW INTELLIGENCE

AGI - ARTIFICIAL GENERAL INTELLIGENCE

ASI - ARTIFICIAL SUPER INTELLIGENCE

CAI - CONVERSATIONAL AI

GPT - GENERATIVE PRETRAINED TRANSFORMER

Chatgpt

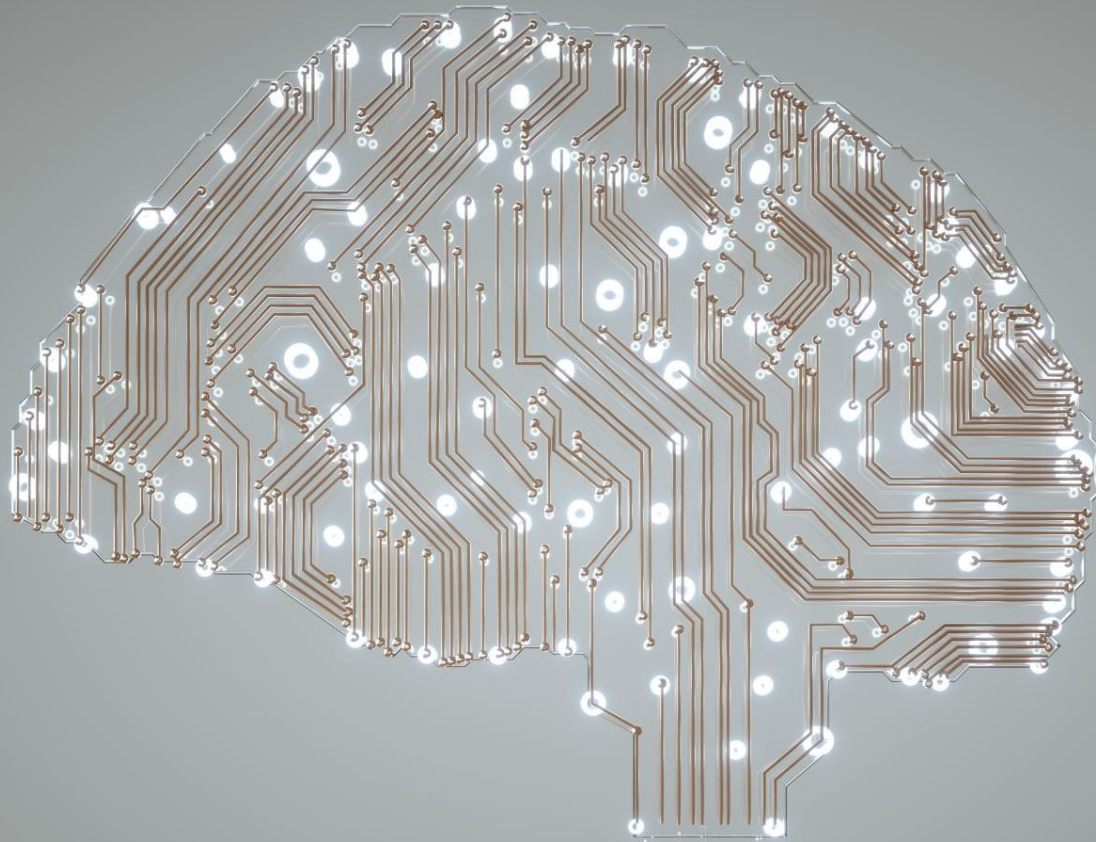November 2022

DISCUSSION TOPICS

- o **Demystifying AI**
- o **AI's Transformative Impact on Healthcare**
- o **Cybersecurity Challenges**
- o **Implications for Healthcare**
- o **Building a Cybersecurity Framework**
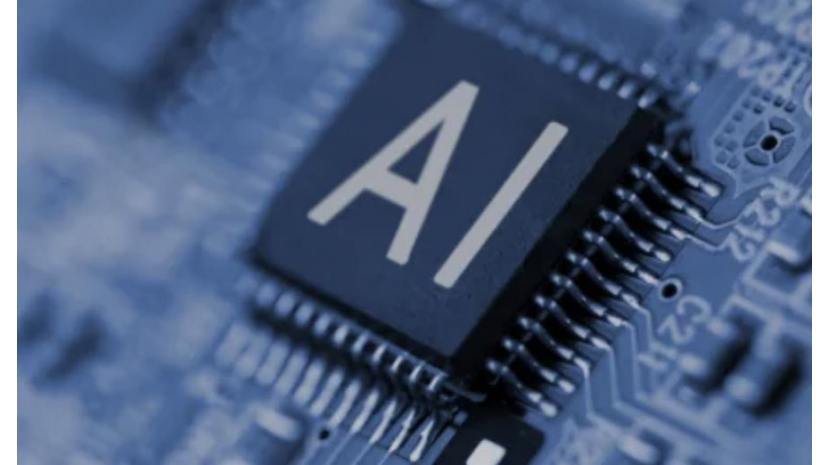- o **Learning from the Field**
- o **The Path Forward**
- o **Q&A**

DEMYSTIFYING AI

UNDERSTANDING THE BASICS

- o **AI, machine learning, and neural networks**
- o **Common misconceptions**
- o **Real-world examples of AI in everyday life**

A.I. 101

A.I. is:

o **Technology evolution**

o **Defined (IBM): Artificial intelligence (AI) is technology, that enables computers and machines to simulate human intelligence and problem-solving capabilities.**

o **First discussed in 1955 at Dartmouth Conference.**

o **Key 2024 technology trend in healthcare: Gartner, Deloitte, PWC all list A.I. in 2024 reports.**

A.I. is not:

o **The latest trend. A.I. will continue to evolve**

o **A silver bullet. A.I. is not answer to challenging HIT issues.**

o **A threat to humanity.**

o **Building electronic brains**

A.I. KEY CONCEPTS

ARTIFICIAL INTELLIGENCE
Early artificial intelligence stirs excitement.

MACHINE LEARNING
Machine learning begins to flourish.

DEEP LEARNING
Deep learning breakthroughs drive AI boom.

1950's   1960's   1970's   1980's   1990's   2000's   2010's

Since an early flush of optimism in the 1950s, smaller subsets of artificial intelligence – first machine learning, then deep learning, a subset of machine learning – have created ever larger disruptions.

MACHINE LEARNING

Transfer learning: Transfer learning involves using the knowledge or skills learned by an AI system in one task to improve its performance in a related task.

Deep Learning – complex algorithms that can manage complex tasks: example self-driving cars

Generative A.I. - refers to deep-learning models that can generate high-quality text, images, and other content based on the data they were trained on.

(Example: ChatGPT, DaVinci)

RECAP

DEMYSTIFYING
ARTIFICIAL
INTELLIGENCE (AI)

o **A.I. is a 'game-changing' technology, like personal computers,**

o **It is neither intrinsically good or bad but can certainly have good and bad consequences.**

o **As healthcare leaders, explore benefits, risks and de-mystify the topic of A.I.**

o **Avoid the hype, fear, over-promise, and confusion of the topic.**

AI'S TRANSFORMATIVE IMPACT ON HEALTHCARE

A CATALYST FOR GROUNDBREAKING ADVANCEMENTS

- Enhanced diagnostic precision
- Improved treatment efficacy
- Elevated patient care experiences
- Streaming of administrative processes

SPECTRUM OF ARTIFICIAL INTELLIGENCE

Rule-Based
Logic

Calculated
Risk Scores

Predictive
Analytics

Targeted
Neural Nets

Generative AI
(Large Language Models)

Deterministic
Targeted

Probabilistic
More Generalized

KEY DRIVERS FOR AI ADOPTION

Resource Shortages

- **Automate routine tasks to free up staff**

Financial Health

- **Reduce costs to optimize operations**

Technological Advances

- **Access to AI tools augmented by the availability of large datasets**

Quality and Efficiency

- **Predict outcomes and personalize treatments**

Patient Experience

- **Offer personalized healthcare and remote monitoring**

Data-Driven Decisions

- **Enable informed clinical and policy decisions**

AI ADOPTION - FOCUS AREAS

7 Image Recognition

4 Clinical Documentation

14 Decision Support

3 Revenue Cycle

8 Operations

MONITORING AI MODELS: KEY CONSIDERATIONS

- **Data drift: Shifts in data reduce accuracy over time**

- **Preventive Measures:**

    - **Regular retraining**

    - **Adaptive learning**

    - **Model combinations**

    - **Feedback loops**

Action: Monitor performance to catch issues early

Managing Data Drift: Ensuring Model Performance Over Time (dataiku.com)

AI GOVERNANCE

LEHIGH VALLEY HEALTH NETWORK ARTIFICIAL INTELLIGENCE STEERING COMMITTEE

Responsibilities

AI Application Review

Policy Development

Education and Training

External Engagement

Decision-Making

Project Approvals

Policy Approvals

Reporting

Compliance and Monitoring

CYBERSECURITY CHALLENGES

A NEW FRONTIER OF RISKS

- Protected Health Information is a prime target for cyberattacks
- Critical infrastructure vulnerabilities
- Potential for AI misuse by malicious actors

HOW CAN A.I. HELP TO PREVENT A CYBERATTACK?

- **Detecting New Threats**
- **Risk Prediction**
- **Automated Response(s)**
- **Phishing Detection**
- **Malware Detection**
- **Vulnerability Management**
- **Security Operations Center (SOC) Support**
- **User and Entity Behavior Analytics (UEBA)**
- **Fraud Detection**
- **Enhanced Encryption**

HOW AI CAN BE USED BY BAD ACTORS?

- **Automated Phishing Attacks**
- **Malware Development**
- **Password Cracking**
- **Social Engineering and Deepfakes**
- **AI-Powered Bots and Botnets**
- **Vulnerability Exploitation**
- **Data Mining and Targeting**
- **Adversarial AI Attacks**
- **Evasion Techniques**
- **Fraud and Identity Theft**
- **Manipulating Public Opinion**

How Can AI Be Used for Good?

o **Use AI to Improve De-Identification**

o **Enhancing Encryption Methods**

o **Machine learning models can recognize hidden patterns to enhance key randomness, helping IT teams develop more robust data masking methods**

o **Generating Synthetic PHI**

o **Generative models can produce synthetic PII or PHI. Since standard pseudonymization lacks sophistication and is relatively easy to crack, this strategy is ideal**

o **Ensuring HIPAA-Compliant APIs**

o **An application programming interface (API) that interacts with electronic PHI must generally adhere to HIPAA. AI can help IT teams manage compliance by automating authentication measures and periodic audits**

WHAT ARE THE MYTHS OF CYBER INSURANCE?

- **Cyber insurance covers all types of cyber incidents**
- **Cyber insurance is a replacement for cybersecurity measures**
- **Cyber insurance will cover all costs associated with a cyberattack**
- **Cyber insurance is too expensive and not worth the investment**
- **All cyber insurance policies are the same**
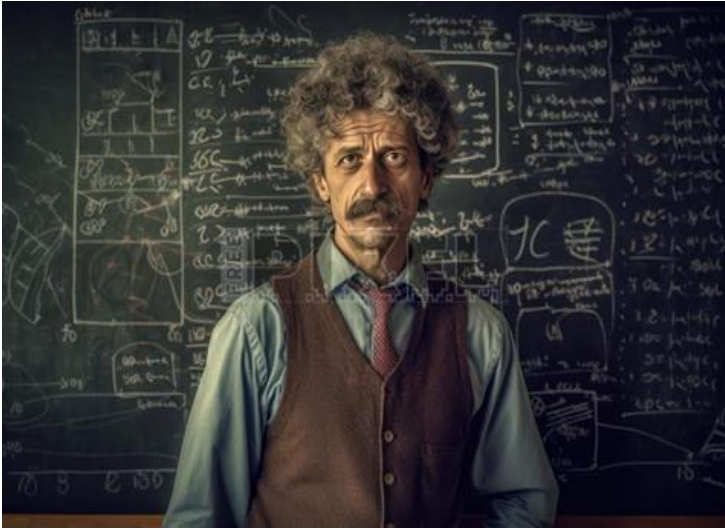- **Cyber insurance is only for large corporations**

IMPLICATIONS FOR HEALTHCARE

BALANCING PROGRESS AND PROTECTION

o **Patient safety concerns**

o **Data privacy and confidentiality challenges**

o **Importance of maintaining the integrity of healthcare services**

IMPACT OF A.I ON HIPAA

- **AI is another location of e-PHI that must be protected from a privacy and security standpoint**
- **Consent to use AI in treatment/DX**
- **Consent to utilize de-identified ePHI with possible AI sources**
- **Right to query/know what ePHI was used to generate AI apps/applications**
- **Breach notification(s) when ePHI is obtained by bad actors utilizing AI platforms**
- **De-identifying data**
- **Establishing robust data-sharing agreements that comply with HIPAA**
- **AI will impact Notice of Privacy Practices (NPPs), Business Associate Agreements (BAAs), and Internal and Third-Party Security Risk Assessments (SRAs)**
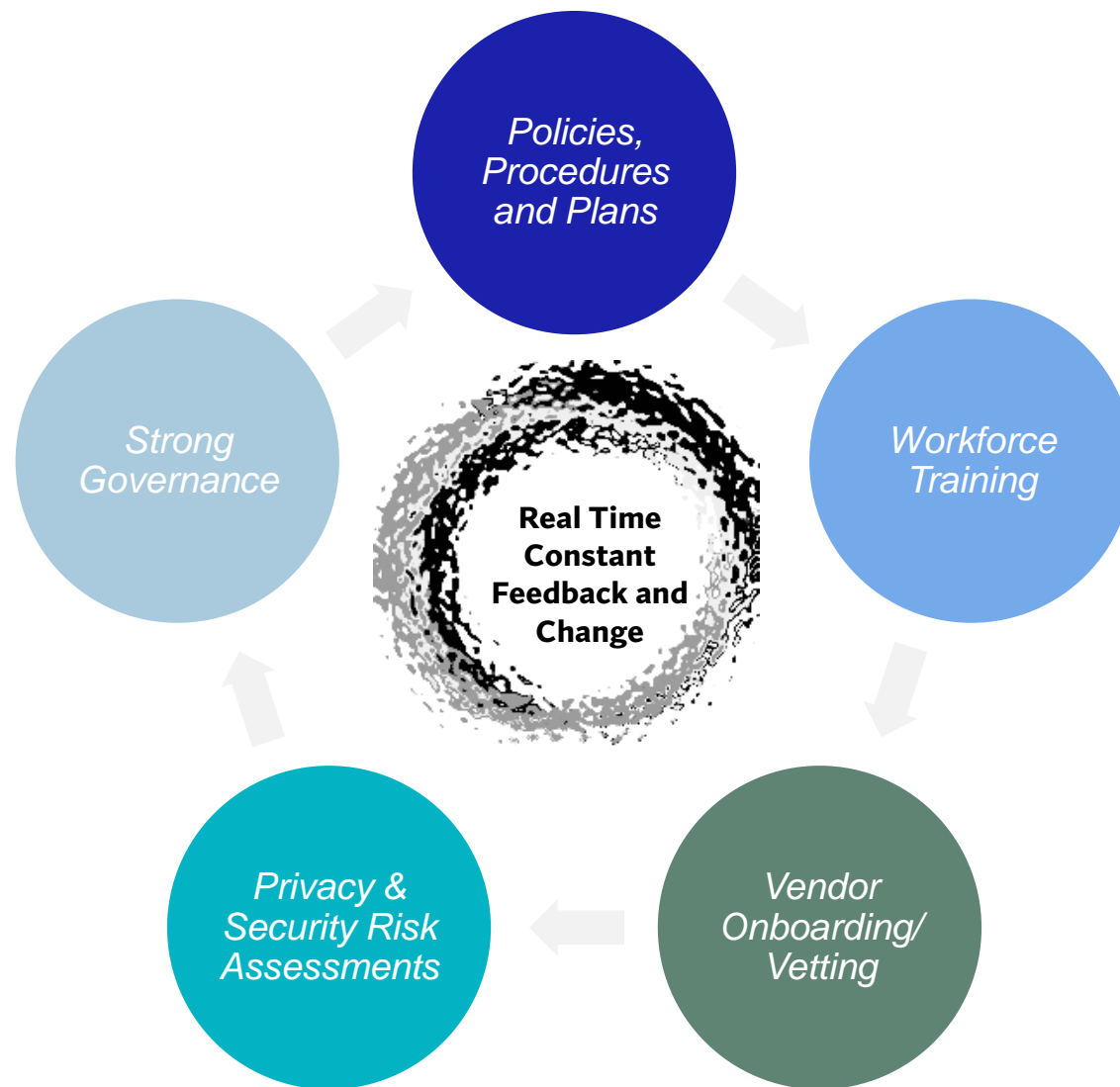
BUILDING A CYBERSECURITY FRAMEWORK

PROTECTIVE MEASURES FOR RISK REDUCTION

- **Robust encryption protocols**
- **Stringent access controls**
- **Regular system audits and vulnerability assessments**
- **Comprehensive staff training on cybersecurity best practices**

LEARNING FROM THE FIELD

REAL-WORLD CASE STUDIES AND INDUSTRY BEST PRACTICES

o Recent cyberattacks

o **Successful** cybersecurity strategies

o Importance of collaboration among stakeholders

RECENT BIG IMPACT ATTACKS IN 2024

THE PATH FORWARD

ENSURING A SECURE AI-ENABLED HEALTHCARE ECOSYSTEM

o **The need for continuous vigilance and adaptation**

o **The importance of ethical AI development and deployment**

o **The role of collaboration and information sharing in combating cyber threats**

AI'S TRANSFORMATIVE IMPACT ON THE FUTURE OF HEALTHCARE

HYPER-PERSONALIZATION

AI models leverage individual data and historical records to create personalized treatment plans based on genetic information, clinical history, and lifestyle factors.

DEMOCRATIZATION OF HEALTHCARE

AI-powered devices are enhancing access and quality of care, particularly in underserved communities, by connecting patients and doctors remotely.

AI-AUGMENTED CLINICIANS

In health care, AI is augmented intelligence — it's about giving your doctors and your nurses more tools to make better decisions for the patients

ACCELERATED DRUG DISCOVERY

AI is revolutionizing drug discovery by analyzing vast datasets to identify candidates and predict their effectiveness, saving time and resources.

SHAPING A RESPONSIBLE AI FUTURE FOR HEALTHCARE

DATA PRIVACY AND SECURITY

Ensuring responsible data handling and patient confidentiality.
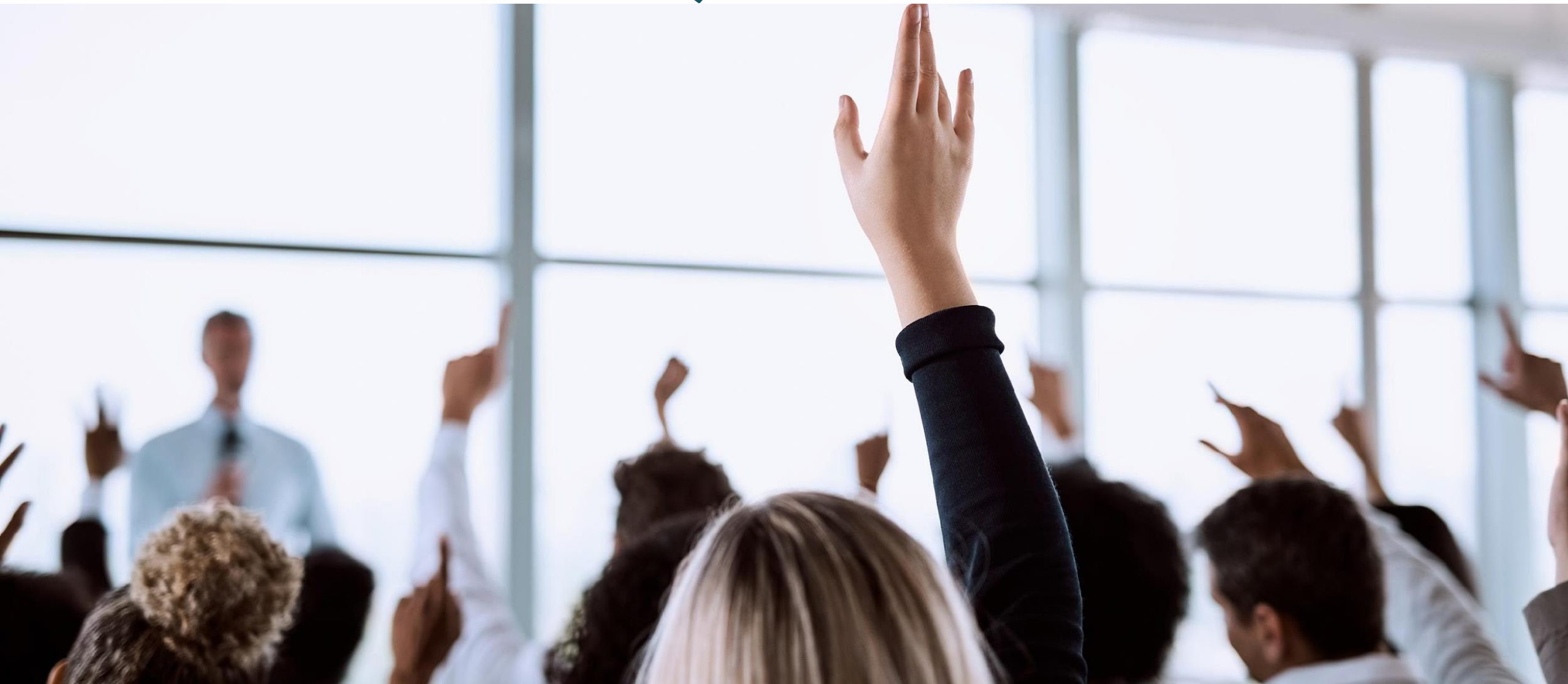
ALGORITHMIC BIAS

Mitigating bias in AI algorithms to avoid disparities in care.

TRANSPARENCY AND EXPLAINABILITY

Making AI decision-making processes understandable to both patients and clinicians.

ANY QUESTIONS?

THANK YOU

APPENDIX

MORE A.I. CONCEPTS

- **Computer vision**

- **Speech recognition**

- **Natural language processing**

- **AI Bias - (Data Bias or Algorithmic Bias – not social bias): occurs when data or information is limited in some way, painting an inaccurate representation of the population, or doesn't tell the full story**

- **A.I. Hallucination - AI hallucinations are incorrect or misleading results that AI models generate.**

4 TYPES OF A.I. (FROM IBM)

- **Reactive Machine** - (Also called Classical or Legacy AI) – linear processing, same input produces the same output
  - **Examples: Chess, Netflix Favorite lists, image identification**

- **Limited Memory Machines** - Adds dimension of time – machine "learning"
  - **Models are built with many inputs processed over layers – reminds us of the way we depict neural pathways of the brain. Neural networks**

- **Theory of Mind A.I.** - Though an unrealized form of AI today, Theory of Mind functionality refers to the ability of artificial intelligence to understand and model the thoughts, intentions, and emotions of other agents, such as humans or other artificial intelligence.

- **Self-aware AI** - (also called Super AI) - If ever achieved, it would have the ability to understand its own internal conditions and traits along with human emotions and thoughts.

THIRD-PARTY VENDOR (BA) AI VETTING QUESTIONS

- **What data was used to train the AI model? Please specify the sources, diversity, and volume?**

- **What measures are in place to handle biases in the model?**

- **How will you monitor and mitigate data drift? What performance metrics are used to evaluate the mode's accuracy and reliability? How frequently do you review and update these metrics?**

- **Anticipating you or your partners are engineering all updates, how will we be engaged in understanding the changes (e.g. release notes) and allowed to test, educate, and deploy?**

THIRD-PARTY VENDOR (BA) AI VETTING QUESTIONS

- **Can you outline how provider or clinicians' feedback is incorporated to improve generated text? Is the feedback individualized to the provider or clinician?**

- **What measures are in place to ensure compliance with relevant healthcare regulations (e.g., HIPAA, ONC HTI-1)?**

- **How will you propose to address expanded data privacy and security concerns within the Agreement/BAA?**

- **What is the contingency plan in case of technology failure or underperformance?**

- **What are the key performance indicators (KPIs) that will be used to measure the success of this AI implementation?**

CURRENT STATE OF AI IN HEALTHCARE
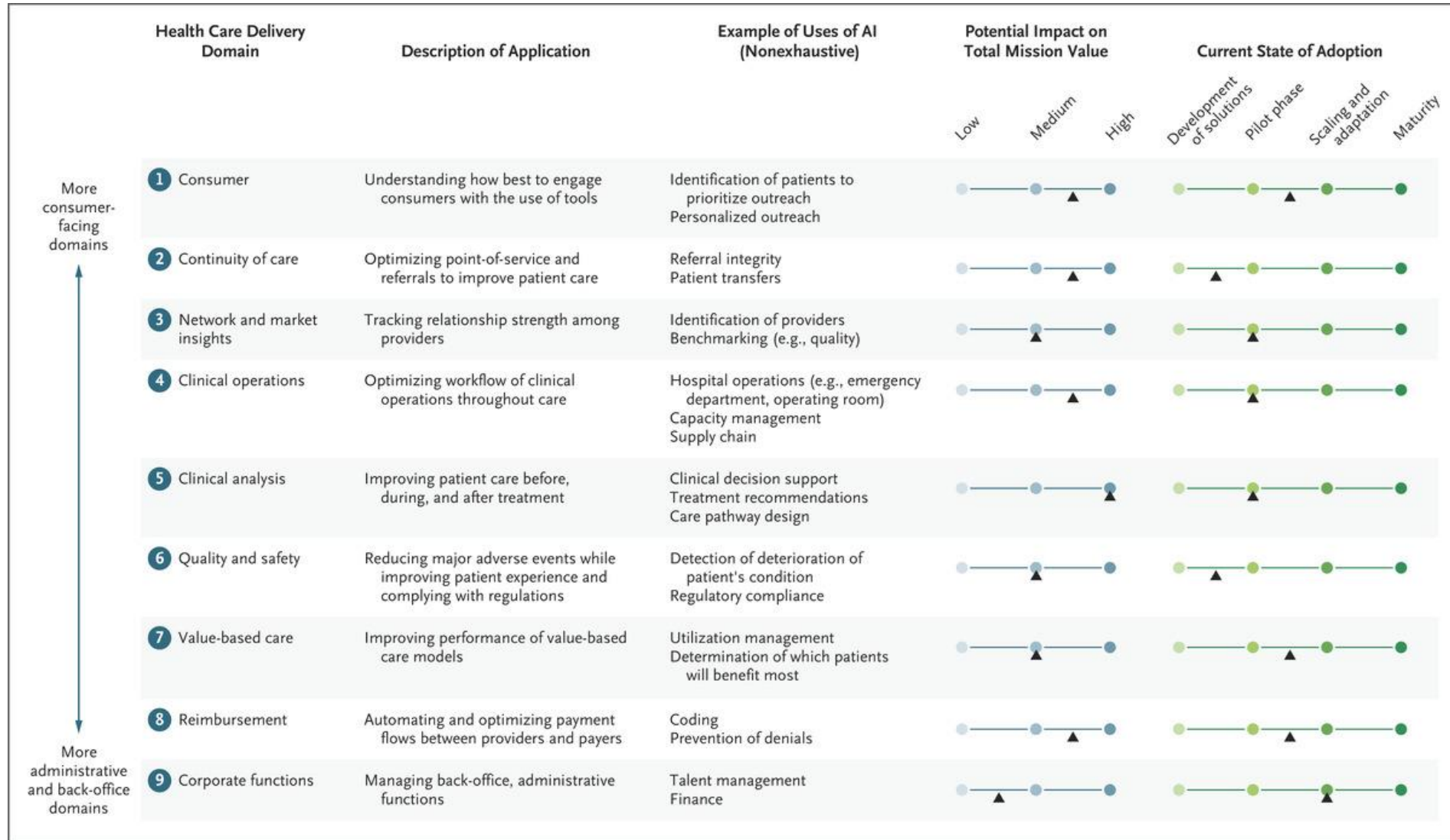
LVHN CUSTOM AI MODELS

Risk of Discharge to Nursing Facility - Predicts discharge to a skilled nursing facility for early intervention

Short Length of Stay (CHF) - Identifies CHF patients likely to have a stay under 3 days, targeting candidates for hospital-at-home care

Risk of Pressure Ulcers - Predicts high-risk patients for pressure ulcers to enable preventative nursing actions

Global Short Length of Stay Model - Predicts which patients will stay less than 2 days to assist early hospital-at-home decisions

Risk of Delirium - Early identification of patients at high risk of developing delirium for timely intervention

Risk of Hypoglycemia - Predicts potential hypoglycemia in hospitalized patients for proactive diabetes care

Risk of Cardiovascular Admission - Predicts cardiovascular hospital admissions in ambulatory patients to support preventative care

COVID-19 Risk of Hospitalization - Uses age and historical data to assess the risk of hospitalization for COVID-19, supporting remote patient monitoring

LVHN THIRD-PARTY SOLUTIONS – LIVE & EXPLORING

- **AIDOC – automatic evaluation of relevant exams, notifying providers after identifying suspected findings**

- **Cortech.AI Neuroquant Aria - AI-assisted monitoring of anti-amyloid immunotherapies for Alzheimer's disease**

- **Epic Draft Responses – automated draft response for patient medical advice messages**

- **First Databank (FDB) Targeted Medication Warnings – pharmacogenomic clinical decision support**

- **GE ABUS Qview and Koios – automated identification of lesions and automatic classification on breast ultrasounds**

- **IKS Health Scribble – Swift – ambient listening, virtual scribe with human scribe review for ambulatory-based encounters**

- **Intuitive Hub – automated performance and quality reporting based on surgical procedure recordings**

- **Nuance DAX Copilot – ambient listening, virtual scribe for ambulatory-based encounters**

- **Microsoft Copilot – generative AI solutions for productivity applications**

- **Nym Health – level of service coding for imaging, professional billing and hospital billing**

- **PatientCo – improved collections using predictive analytics to determine most likely method for payments**

- **RadAI Omni - AI-driven care coordination system for follow-up recommendations on significant incidental findings in imaging**

- **ServiceNow – knowledge-base, generative AI responses for support**

- **Viz.AI Hypertrophic Cardiomyopathy (HCM) – retrospective/proactive identification of patient disease using ECG/EKG**

- **Viz.AI Stroke – automated evaluation of CT images, notifying neurologist of suspected findings**

Gerry Blass

CEO
ComplyAssistant

Gerry is President and CEO of ComplyAssistant, which provides GRC software and healthcare cybersecurity service solutions to over 100 healthcare organizations of all sizes. The company focuses on HIPAA-HITECH-OMNIBUS, HICP, PCI, NIST, and other federal and state healthcare regulations.

Gerry currently co-chairs the NJ HIMSS Privacy, Security, and Compliance Committee and participates in national and local chapter events that include NY, NJ, and Delaware Valley.

Gerry regularly writes for healthcare compliance and health IT publications. He's an active member, contributor, and speaker at industry association events with HIMSS, HFMA, NJPCA, NJAMHAA, and HCCA.

Jack Hueter

CEO & Owner,
Digital Healthcare Consulting

Jack worked for more than 30 years as a CIO and Healthcare IT executive.

Jack is a Rutgers University graduate with a Bachelor's in Business Administration and an MBA. Jack is also a Certified Public Accountant in the state of Pennsylvania.

Jack enjoys golf and the beaches of New Jersey and Florida with his wife, Eileen, their dog Bella, their three children, and four grandchildren.

Richard Kerr

Administrator, Clinical Applications
Lehigh Valley Health Network

Rick is an accomplished technology leader renowned for implementing innovative solutions that enhance clinical and business outcomes with over 25 years in healthcare IT and clinical pharmacy experience. Rick has leveraged his expertise in crafting digital strategies that catalyze transformative improvements in healthcare delivery. He spearheaded the Epic implementation across all LVHN locations, growing to 14 hospitals, 400 outpatient locations, 24,000 end-users, and more than 1,000,000 active portal patients.

Rick's proven track record highlights a commitment to revolutionizing healthcare delivery by developing and executing on strategies that prioritize clinical quality, high reliability, efficiency, and positive operating margins. From implementing dynamic patient scoring for remote ICU management 20-years ago to recent solutions that use image-based machine learning to prioritize critical studies, the ability to realize value from Artificial Intelligence is based on establishing clear expectations, workflows, and monitoring outcomes.

Rick is the current Chair of PA Health Information Exchange Trust Community Committee, and a Fellow in The Health Management Academy AWS Technology Program.

Sabina Zafar

Founder, AI Cloud Consulting Group
Managing Partner, Valenta

Sabina Zafar is a dynamic leader with a passion for empowering businesses through technology and AI. As the Founder & CEO of AI Cloud Consulting, she guides organizations on their digital transformation journeys, leveraging AI to achieve their goals. She also shares her insights as a Managing Partner at Valenta, working with a global clientele.

With over 20 years of experience, Sabina's expertise spans industries like healthcare, finance, and government. She has held leadership roles at companies like Oracle and GE, driving successful cloud-based solutions and building high-performing teams. Her track record speaks to her commitment to delivering results and exceeding client expectations.

Sabina's firsthand insights into the challenges and opportunities in healthcare make her a particularly valuable contributor to discussions on AI's role in improving patient care, streamlining operations, and driving innovation.

Her passion for technology, combined with her collaborative approach and focus on results, makes her an invaluable partner for businesses seeking to leverage AI and innovation for growth across various sectors.

Martin von Grossmann

Senior Consultant

Marty, M.S., M.S.A, LSSGB, has served as Chief Information Officer (CIO) with a hospital and health system in New Jersey. He managed the integration of major healthcare and financial systems during years of M&A activities.

Marty led small businesses and startups developing innovative technologies in Augmented Reality, Virtual Reality, and Mixed Reality applications, and his passion continues to be Cybersecurity and related domains.

Marty brings 25 years of dedicated military leadership, retiring after achieving the rank of Lieutenant Colonel in the United States Air Force.