The Fax and the Furious...

The Prescription for Modern Healthcare Data Exchange

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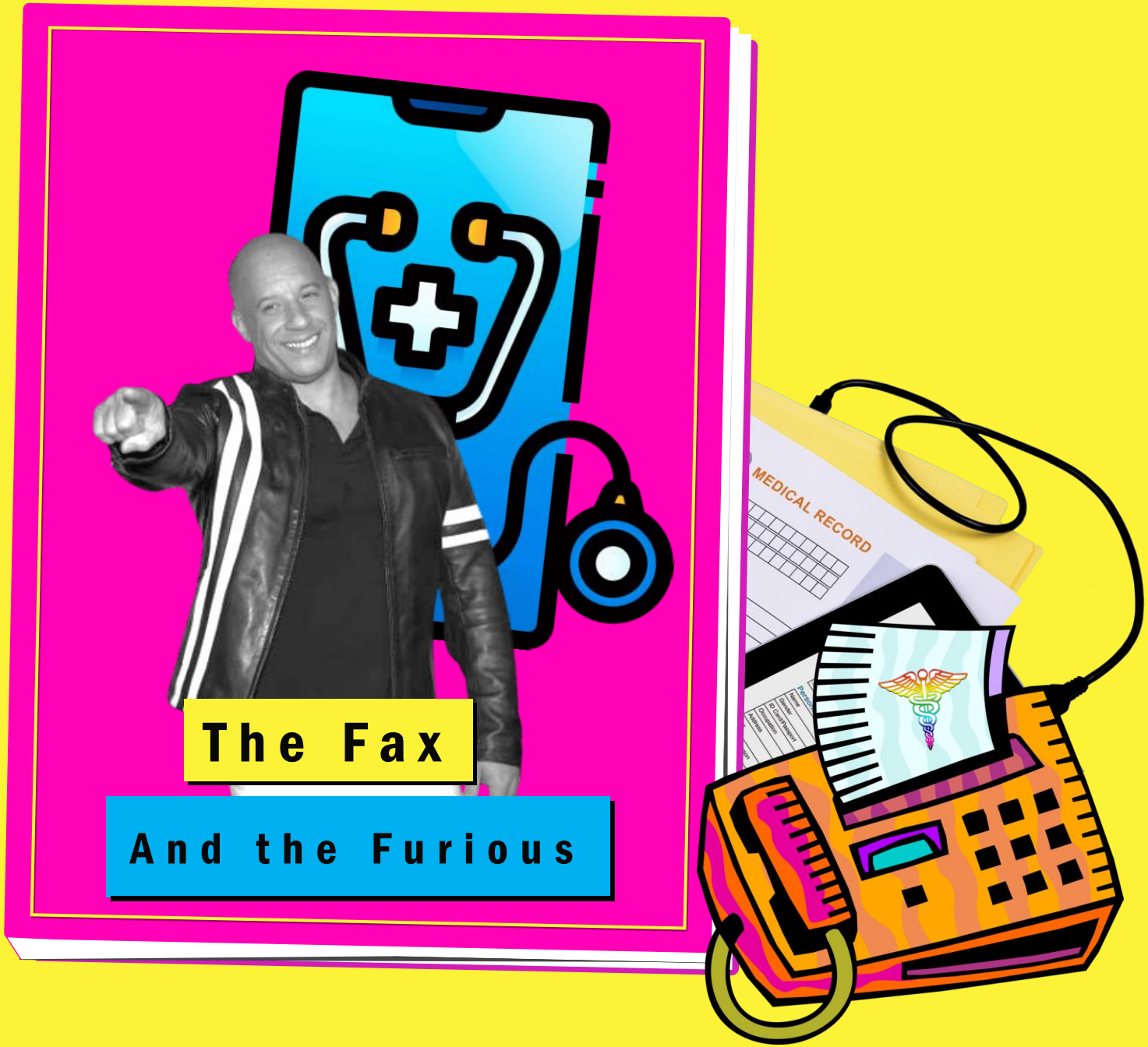
Agenda

What to look out for...

- >Whoami
- Background
- Legacy of Fax Machines
- Security Pitfalls of Fax Machines
- Barriers to Care
- Digital Transformation
- From Fax to Future
- Conclusion

>WHOAMI

- Technology Professional, >15 years
- Sr. Product Manager @ Microsoft
- New Yorker / Nuyorican
- Mom
- Star Trek Fan
- Had brain surgery in 2016; radiation in 2022
- I don’t drive ¯_(ツ)_/¯



Why We're Shifting Lanes

Getting under the hood, to understand our mission...

WTF IS A FAX AND WHY TF DOES IT MATTER

- **Unpacking the Fax Phenomenon**
  - The genesis of rapid data exchange; still a critical tool in healthcare operations
- **Why are we at a crossroads?**
  - Antiquated technology and suboptimal medical care
- **What's our north star?**
  - A secure healthcare ecosystem, ensuring patient confidentiality and care delivery

HISTORICAL ACCELERATION

The first fax machine, or facsimile machine, **was invented in 1843** by Alexander Bain

Commercial Success in1960s: **By 1970s, the fax entered healthcare**, marking a new era in medical communication

Fax was the **Lifeline of Healthcare Communication,** for Quick, Reliable Patient Information Sharing

Classic Cruise Control

Endurance Race

Understanding Fax's Tenacity in Healthcare

Established as a standard due to its widespread availability and simplicity

Continues as a legacy system due to entrenched habits and resistance to change

Fax machines are regarded compliant with HIPAA and other privacy laws

TURBOCHARGED TRUST: POWERING PATIENT PRIVACY WITH HIPAA

- Health Insurance Portability and Accountability Act of 1996
- Established to protect the privacy and security of individuals' medical information
- Sets standards for the handling, use, and sharing of Protected Health Information (PHI)
- Requires appropriate administrative, physical, and technical safeguards to ensure the confidentiality, integrity, and security of electronic PHI
- Mandates that any communication tool, like fax machines, email, or digital messaging platforms, used to transmit PHI must meet HIPAA compliance guidelines

SAFETY GEARS: TRADITIONAL FAX IN THE HIPAA COMPLIANCE LANE

- Direct Transmission Security
  - Point-to-Point Communication == Minimal Exposure Risk
- Physical Control Over Fax Machines and Output
- Administrative Controls
- Technical Safeguards

High-Speed Hazards: Pitfalls of Faxes in Healthcare

Security Spinout: Losing Control in the Fast Lane

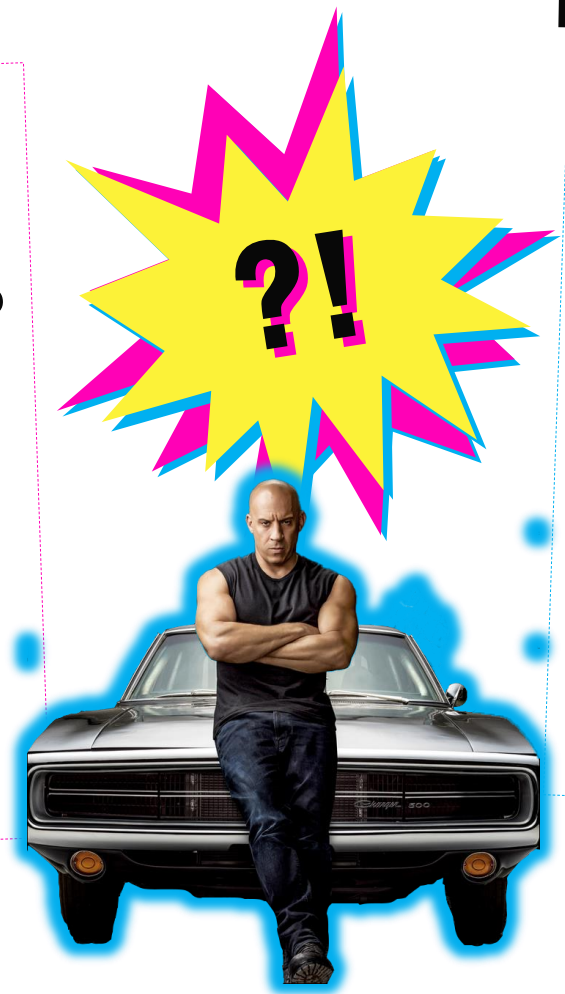
- Lack of encryption and secure authentication
- Risks of physical document theft in communal areas
- Misdialed numbers and machine errors can cause serious information mishaps
- Delays in fax communication can lead to slower patient care and treatment
- Dependence on fax machines may exclude or inconvenience patients without easy access to fax technology

Speed Traps and Security Gaps

Roadblocks to Healthcare

Fax in the Rearview

- Equipment and Operational Constraints
  - Faxes require specific hardware that may not be readily available to all patients or providers, particularly in remote or underserved areas
- Challenge for patients without fax access
  - Delays in obtaining necessary medical information can affect treatment timelines



Outrunning the Outdated

- Fax technology not immune to Common Vulnerabilities and Exposures (CVEs)
  - Discovered by Check Point researchers, Faxploit exploits weaknesses in the communication protocol used by fax machines
  - Through compromised phone lines, attackers can send maliciously crafted images which, when processed by a fax machine, allow them to infiltrate connected networks

CRITICAL TURN: UNRAVELING THE FAX VULNERABILITY ROUTE

- **Vulnerability research by check point revealed fax protocol flaws in HP devices**
- ‘Faxploit’ permits unauthorized code execution via T.30 fax protocol
- Intrusion Vector: Malicious Image File Transmission over PSTN
- Compromised fax machines decode the image, inadvertently executing embedded malicious payload
- The exploit leverages buffer overflows and other exploits at the firmware level
- Attackers gain lateral movement capabilities within the network architecture
  - Potential for data exfiltration and lateral propagation of ransomware or spyware

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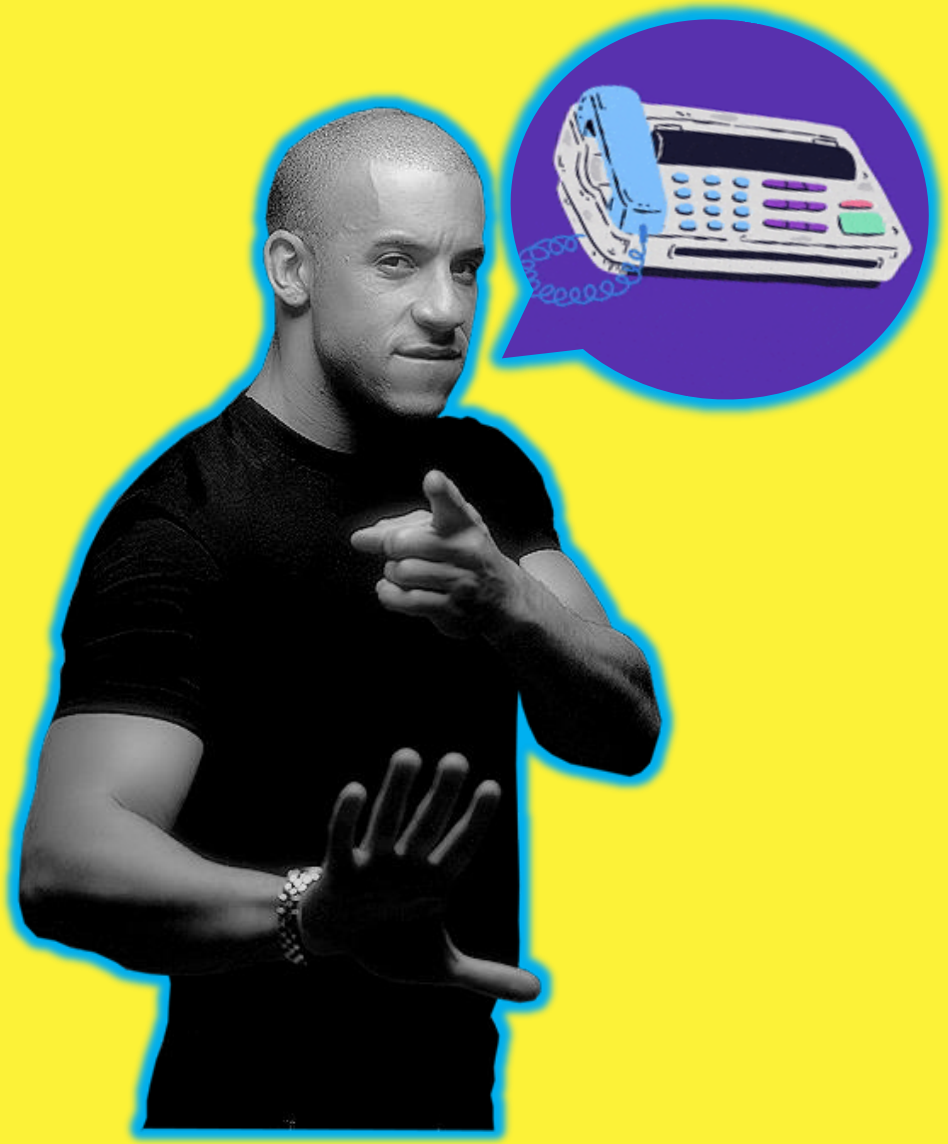

- Fax Mismanagement at St. Luke’s-Roosevelt Hospital Center
- A misdirected fax led to a $387,200 HIPAA settlement
- Investigation Triggered by Patient Complaint
- Previous similar breach nine months earlier without corrective action

Risky rides, Safe Shifts

Digital Overdrive & Next Gear Necessity – Shifting Up to Safer Healthcare Communication Lanes

Revving Past the Old Guard: Virtual Fax Takes the Lead

Traditional Faxes

- Relies on physical machines, paper, and analog phone lines to transmit documents, which must be manually retrieved and handled
- Requires maintenance of hardware, physical space; incurs costs for paper, ink, & telecom services

VS.

Virtual Faxes

- AKA online fax or e-fax – operates without a physical fax machine, using internet connections to send and receive documents
- Documents are transmitted via secure servers and can be accessed through web portals, email, or mobile applications
- Virtual fax generally uses encrypted transmission protocols and complies with healthcare regulations like HIPAA for handling sensitive information

The Need for Digital Overhaul

- Digital platforms **offer robust security protocols**, including multi-factor authentication and end-to-end encryption
- Automated digital workflows **minimize human error** and **enhance data integrity and traceability**
- Facilitate **real-time data exchange**, equipped with **advanced threat detection and response** mechanisms
- Support **scalable security measures**, adapting to evolving cyber threats and regulatory requirements

A Turbocharged Upgrade for Healthcare Data Protection

- Transitioning from traditional faxing to secure electronic methods is crucial for modernizing healthcare data exchange:
  - **Secure messaging** platforms offer encrypted communication channels for sharing sensitive patient information
  - Integrating **Electronic Health Records (EHR)** with secure communication systems streamlines data exchange and enhances interoperability
  - **Health Information Exchange (HIE)** Messaging platforms facilitate secure and standardized exchange of patient health information among healthcare entities

HIE and FHIR: Redefining Data Speedways in Healthcare

- Fast Healthcare Interoperability Resources (FHIR) is a standardized data format for exchanging electronic health records (EHRs) securely
- HIE and FHIR offer secure electronic data exchange, reducing reliance on paper-based methods
- Supports real-time data access, interoperability, and improved care coordination

TURNING PAPER TRAILS INTO LIFELINES

- Role of fax machines evolves from primary to supplementary
- While suboptimal as business as usual, fax machines can still play a role in maintaining operational resilience
- Cater to specific instances where immediate and secure document transmission is essential but digital alternatives are unavailable

Thank You

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