Improve Patient Safety and Staff Well-being Using Voice-Activated Smart Devices

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Improve Patient Safety and Staff Well-being Using Voice-Activated Smart Devices

Learning objectives of this presentation:

- Observe how finding and implementing a solution for a specific patient safety problem that led to solving other communications issues at one NYC hospital
- Share the concerns of patient safety and staff well-being and how voice technology is helping in this regard
- Share new voice technologies being piloted which has the potential change the healthcare eco system
- Witness the amazing future of voice technology

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Key takeaways of this presentation:

- As HTM professionals we should always be looking for opportunities to improve patient and clinician safety using new and emerging technologies
- As voice technology plays a major role in the healthcare microcosm, make it your HTM strategic goal to unify different forms of voice technology with one vendor ASAP.
- You will be surprised to find that different vendors communication devices being used by departments of hospital. Ex. PA phones, OB-GYN on call...
- Collaborate with clinical and Telecom leadership to find the voice technology which is a good fit for your organization's strategic goals.

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Challenge and Solution

Challenge

Telemetry nurse tethered to one workstation all day

Agenda

- Exploring Care Team Communication Challenges
- Evaluating Communication Technology
- Deploying Technology and Supporting Clinician Adoption
- Discussion Intelligent System Integrations
- Measuring the Impact of Effective Communication

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Essentials

- Interoperability
- Intelligent escalation workflows
- Contextual Information
- Hands-free communication to provide direct patient care

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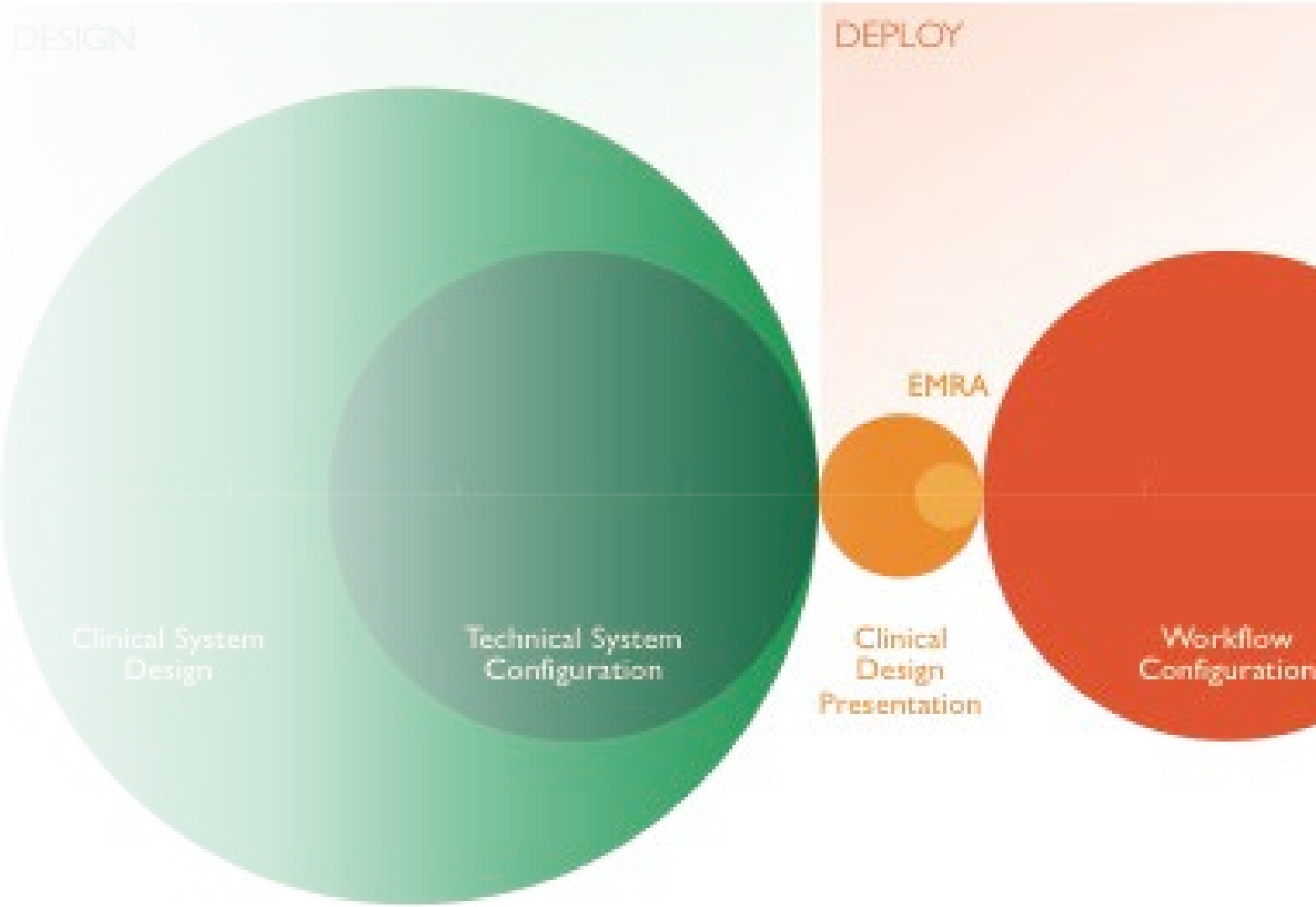
Goals for Managing Alarms

- Save valuable time
- Streamline clinical workflows
- Increase operational efficiency
- Improve patient safety
- Reduce alarm fatigue
- Elevate care team satisfaction

Deployment and Adoption

Designing A Deployment Strategy



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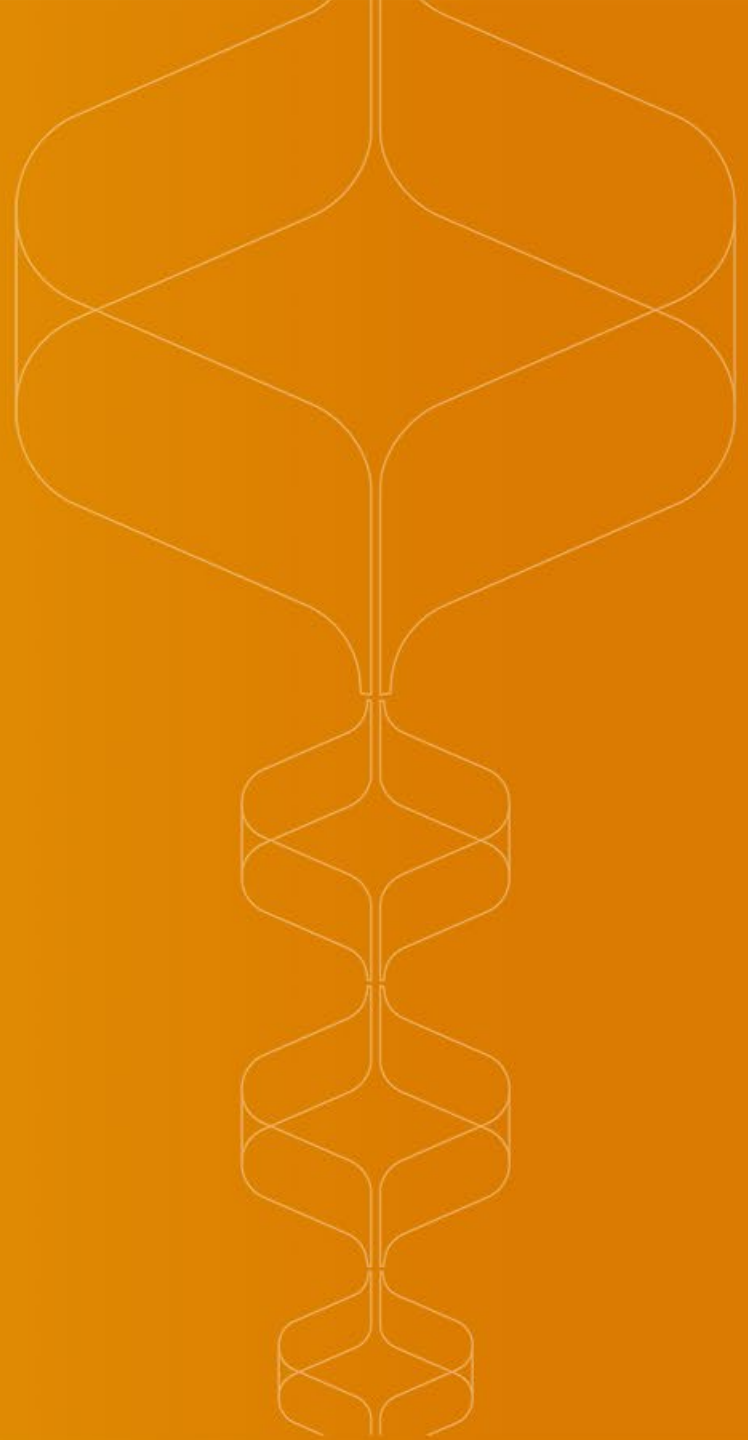
Considerations

- Empower collaboration: IT & clinical
- Deploy flexible solutions that can solve other challenges
- Consider COVID-19
- Measure the impact of the technology

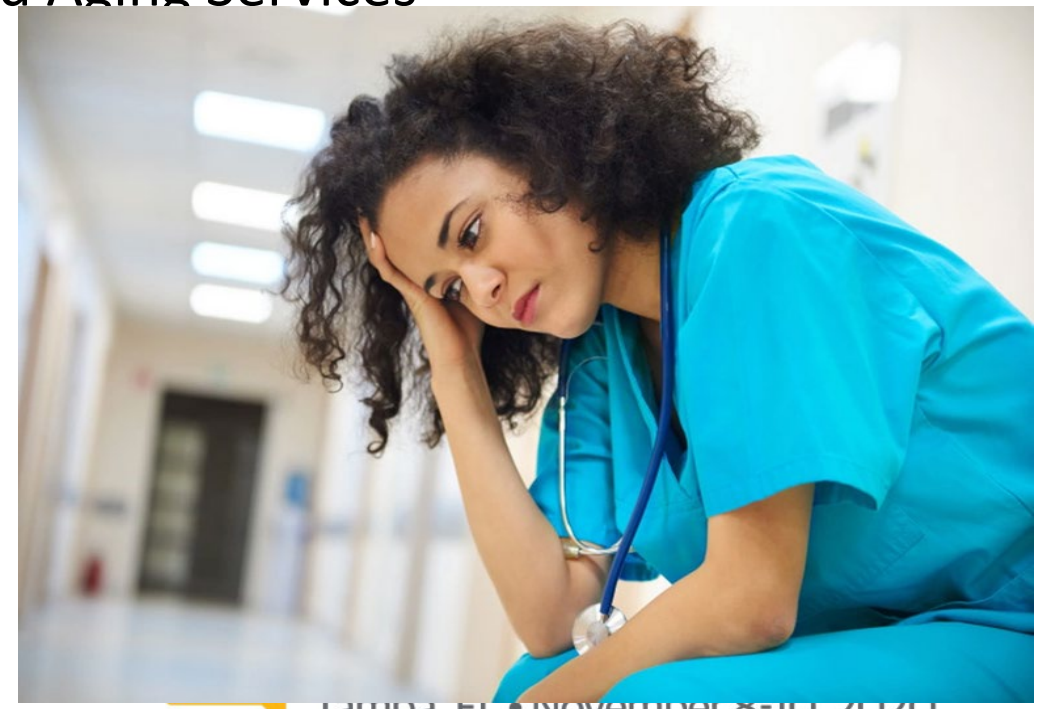
Clinician burnout ‘public health crisis’



Could voice-enabled digital scribing tools reduce burnout?

2019 Top 10 Patient Safety Concerns

- Diagnostic Stewardship and Test Result Management Using EHRs
- Antimicrobial Stewardship in Physician Practices and Aging Services
- Burnout and Its Impact on Patient Safety
- Patient Safety Concerns Involving Mobile Health
- Reducing Discomfort with Behavioral Health
- Detecting Changes in a Patient's Condition
- Developing and Maintaining Skills
- Early Recognition of Sepsis across the Continuum
- Infections from Peripherally Inserted IV Lines
- Standardizing Safety Efforts across Large Health Systems



Clinician Burnout: Identified in 1960

According to a national nursing engagement survey released in April 2019:

- 15.6% of nurses reported feelings of burnout.
- Emergency room nurses were identified at being at a higher risk for burnout and 20% of ER nurses reported feeling “unengaged”.
- 50% of nurses who reported feeling burnout in their current position also reported no immediate plans to leave their organization.
- Another 41% of nurses reported as being “unengaged”.

https://nurse.org/articles/joint-commission-tackles-nurse-burnout/

Physician burnout as ‘public health crisis’

By 2025, the U.S. Department of Health and Human Services predicts that:

- There will be a nationwide shortage of nearly 90,000 physicians, many driven away from medicine or out of practice because of the effects of burnout.
- Further complicating matters is the cost an employer must incur to recruit and replace a physician, estimated at between $500,000 and $1,000,000.

https://www.hsph.harvard.edu/news/press-releases/leading-health-care-organizations-declare-physician-burnout-as-public-health-crisis/

How voice technology is already improving clinician well-being

Voice technology assisting clinicians :

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- Physicians
- Pharmacist
- Surgeons and Nurses
- Radiology
- Speech Therapy
- Other clinicians

Voice technology assisting in medical transcription:

- Primary care physicians spend more than one-half of their workday, interacting with the EHR during and after clinic hours. HTTPs://www.annfammed.org/content/15/5/419.long
- Microsoft is working with Nuance to bring its clinical voice technology to its Microsoft Azure cloud computing platform.
- Google announced a partnership with voice assistant firm Suki, to improve language models for Voice Assistants. https://resources.suki.ai/in-the-news/suki-partners-with-google-cloud
- Amazon announced the launch of a medical transcription service, Transcribe Medical, to make clinical documentation more efficient. https://www.annfammed.org/content/15/5/419.long

Voice technology helping Pharmacy clinicians:

- Voice assistants can change the pharmaceutical landscape especially in the areas of adherence and distance care. The addition of visual voice devices, such as the Amazon Show and Google Home Hub, creates the opportunity to add a new dimension to **education**.

- Pairing these connected devices with scheduled tasks and reminders enables care teams to track the adherence of patients and loved ones. https://www.pharmavoice.com/article/2018-11-voice-assistants/

- Voice Refills for Giant Eagle Pharmacy Patients. https://www.gianteagle.com/pharmacy/alexa-pharmacy-skill

Voice activated pictures and labeling

- Doctors can **verbally trigger photos** to be taken during procedures, such as colonoscopies, and **label** them as they perform the surgery.
- ICU nurses can request blood samples, laboratory data and properly categorize them. https://www.omnicomhealthgroup.com/pdfs/VoiceRecognitioninHealthcare.pdf

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Voice technology helping Interventional Radiology:

- Smart speaker technology harnessed for hospital medical treatments

- As per the Society of Interventional Radiology, smart speakers, such as the Amazon Echo and Google Home offer a conversational voice interface that allows interventional radiology (IR) physicians to ask questions and retrieve information needed for their patient treatments without breaking sterile scrub. https://www.sciencedaily.com/releases/2019/03/190324090526.htm

Voice technology assisting in speech therapy:

https://www.centralspeech.com/

Alexa Speech Skills

CoreVoice

CoreMatch

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Voice technologies during COVID-19 helped with patient safety and clinician well-being

Crises have a way of changing the world forever.

- 9/11 — Airport Security
- HIV — Needle Sticks
- COVID-19 — Social Distancing, outdoor only dining, Mask, PPE…

COVID-19 Hands-Free Technologies

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Hands-free voice tech helps Saratoga Hospital save PPE and ensure staff safety throughout COVID-19

- **Challenge:** Technology that enables staff to quickly and safely share information and request support while in PPE and in isolation environments.
  Results: Using Vocera Badges
  - Care teams can communicate safely and efficiently in isolation environments and while wearing PPE.
  - Reduce their risk of self-contamination by minimizing the number of team members who must be in the patient room during intubation.
  - Staff working in an isolation environment don't have to waste time or PPE or interrupt patient care if they need supplies

https://www.healthcareitnews.com/news/hands-free-voice-tech-helps-saratoga-hospital-save-ppe-and-ensure-staff-safety

Hands-free technology improves patient experience at University Hospitals of Cleveland during the pandemic

- **Challenge:** Enhance patient safety through medical handoff shift reports during the COVID-19 pandemic.

  Results: Using Vocera Badges

  - The patient has a Vocera Badge, and so do the nurses conducting the handoff shift report.
  - Through Vocera, the nurses and the patient are all on the same call.
  - Having all these people involved in the medical handoff increases safety because they can listen in and catch any information errors.

https://www.hcinnovationgroup.com/population-health-management/patient-engagement/article/21156784/at-university-hospitals-of-cleveland-rethinking-the-patient-and-family-experience-during-covid19

Clinical pharmacy services use Hands-free technology for remote staffing at Intermountain Healthcare

- **Challenge:** Required a solution to enable remote pharmacists and on-site hospital care teams to communicate.
  Results:
  - On-site hospital care teams can easily connect with the responsible clinical pharmacist by calling them using their Vocera Badge.
  - For example, a nurse working in one of Intermountain Healthcare's hospitals can say "call on-call remote clinical pharmacist" from his Vocera Badge or Smartbadge and he or she will be connected to the responsible clinical pharmacist.

https://academic.oup.com/ajhp/article/77/15/1250/5837123

Resources

- 2020 Gartner Hype Cycle Report for Real-time Health Systems https://www.vocera.com/2020-gartner-hype-cycle
- Sage Whitepaper: Critical Role of Communication in Providing Safe, Effective Healthcare https://www.vocera.com/sites/default/files/2020-08/Sage-2382-WP-202008-WEB-US.pdf
- Vocera COVID-19 Use Case Library https://www.vocera.com/sites/default/files/COVID-19ResponseTacticsUseCaseLibrary_20200331.pdf

Future of voice technologies in Healthcare

Voice as one of our vital signs

Detecting health conditions "physical or emotional abnormality" by voice.

Alexa tech can tell if you're sick, depressed and even sell you medication. https://arstechnica.com/gadgets/2018/10/amazon-patents-alexa-tech-to-tell-if-youre-sick-depressed-and-sell-you-meds/

Out-of-hospital cardiac arrest is a leading cause of death worldwide. One of the diagnostic elements of cardiac arrest is the presence of agonal breathing. An audible biomarker can be monitored to diagnose cardiac arrest early and potentially safe lives.

https://www.nature.com/articles/s41746-019-0128-7

Healthcare trained voice agent

Possibility of a healthcare trained voice agent. Intuition Robotics introduced **PlatformQ**

After a sports injury knee replacement surgery a patient goes home with Healthcare trained voice agent specific for the orthopedic patients called a “Knee Replacement Recovery Voice Agent”

https://intuitionrobotics.com/

CERTIFIED or LISCENSED or REFISTERED

Physician-Patient conversation into EHR/EMT in real-time

- Cerner Corp., which entered a cloud collaboration with Amazon along with the new machine-learning service.
- Cerner is using Transcribe Medical to develop **a digital voice scribe that can "listen" in the background during a patient's visit and transcribe physician-patient conversations into text. Cerner's goal is to create a tool that can then automatically document notes into its electronic health record system.** Cerner is in the "initial development" stage of that digital voice scribe project, said Jacob Geers, a solutions strategist at Cerner, in a statement.
  https://www.modernhealthcare.com/operations/amazon-launches-medical-transcription-service

Voice as Password for secure authentication.

Who is speaking? Multi-factor voice authentication becomes a reality.

Just as with banking transactions, healthcare providers and patients will want to verify and be verified as the person for whom the information is intended.

Verification and HIPAA compliance together will **make voice-enabled care plans a reality.**

The voice biomarker is ‘the highest common factor’ and the easiest for the user, according to Douwe Korff, of ValidSoft, or as he says, “Just Speak!”

https://www.biometricupdate.com/201906/the-importance-of-voice-biometrics-in-the-healthcare-industry

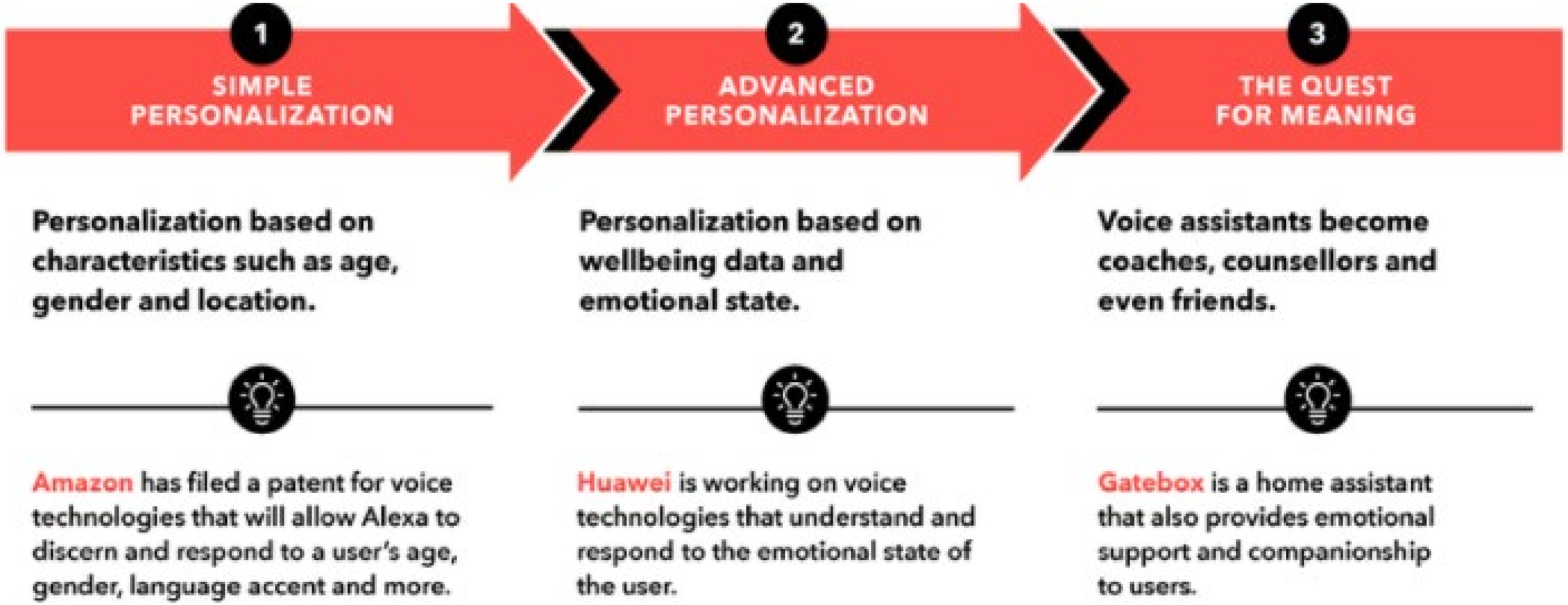
Voice technology into the future:

- https://www.ageinplacetech.com/files/aip/Voice%20Health%20and%20Wellbeing%202020%20Final%20-%201-5-2020.pdf

From	To
Predominantly English	Multi-lingual, even within a single conversation
Proprietary software	Standards-based interoperability
Transactional, limited Q&A	Contextual, proactive, with qualitative analysis
Disconnected from health data	Integrated with patient care plans, records
Generalized	Personalized
Disease aware skills	Disease specific assistants and agents
Educating the patient	Assessing the patient
Voice assistant	Voice expert agent

Voice technology into the future:

https://www.weforum.org/agenda/2019/07/voice-technology-personalization/



Amazon and Leading Technology Companies Announce the Voice Interoperability Initiative

- Developing voice services that can **work seamlessly with others on a single product,** while protecting the privacy and security of customers
- Building voice-enabled devices that promote choice and flexibility through multiple, simultaneous wake words
- **Accelerating machine learning and conversational AI** research to improve the breadth, quality and interoperability of voice services
- https://press.aboutamazon.com/news-releases/news-release-details/amazon-and-leading-technology-companies-announce-voice

Pilots projects of voice technologies

- A pilot project at Cedars-Sinai placed 100 Amazon Echo devices in patient rooms throughout the hospital. Using an Alexa-powered platform, users were able to speak to access entertainment options and request staff assistance.
- Boston Children's Hospital is targeting parents with KidsMD, an Alexa skill that offers information about common ailments and medication dosing.
- The Mayo Clinic First Aid skill, was launched by the Mayo organization to suggest care tips for non-emergency situations.
- Atlanta-based Thrive Senior Living is leveraging Google and Amazon smart speakers to support a custom suite of applications that route requests and questions to care teams. A test run found that residents liked the approach, and employees came better.

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