



Providing Patient Home Clinical Decision Support using Off-the-shelf Cloud-based Smart Voice Recognition

WIN 2017 Conference CDS Stream, 24th Jan 2017

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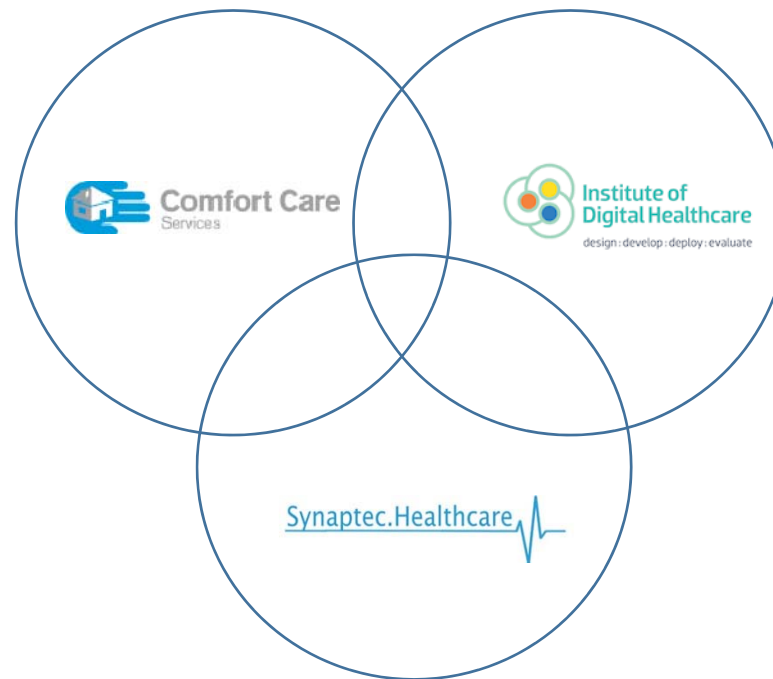
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Collaboration



- Providing Patient Home Clinical Decision Support using Off-the-shelf Cloud-based Smart Voice Recognition [Technical Proof of Concept]



Case study in mental health



- Some adults with enduring mental health conditions need ongoing social and clinical support
 - Monitoring of their mental and physical health
 - Prompting to adhere to medication regimes
- 30-50% of patients do not adhere to their prescribed medication regimes increasing risk of relapse
- Comfort Care experience shows that timely, person-centred, support improves adherence to medication
- Human intervention (and interaction) is effective but expensive
- Customisable and engaging technology offers an alternative for some patients

Self-management and technology



- Self management offers advantages
 - Independence for the patient
 - Patient outcomes are improved
 - Cost reduction to the healthcare system
- Ability of the patients to directly interact with an extended healthcare system
 - Enabled by technology advances in human computer interaction
 - Gestures, natural language voice, video, sensors
- Variable modes of interactions
 - Reminders
 - Data collection and storage
 - Assessments and data analysis
 - Clinical decision support

Off the shelf technology: £50-150



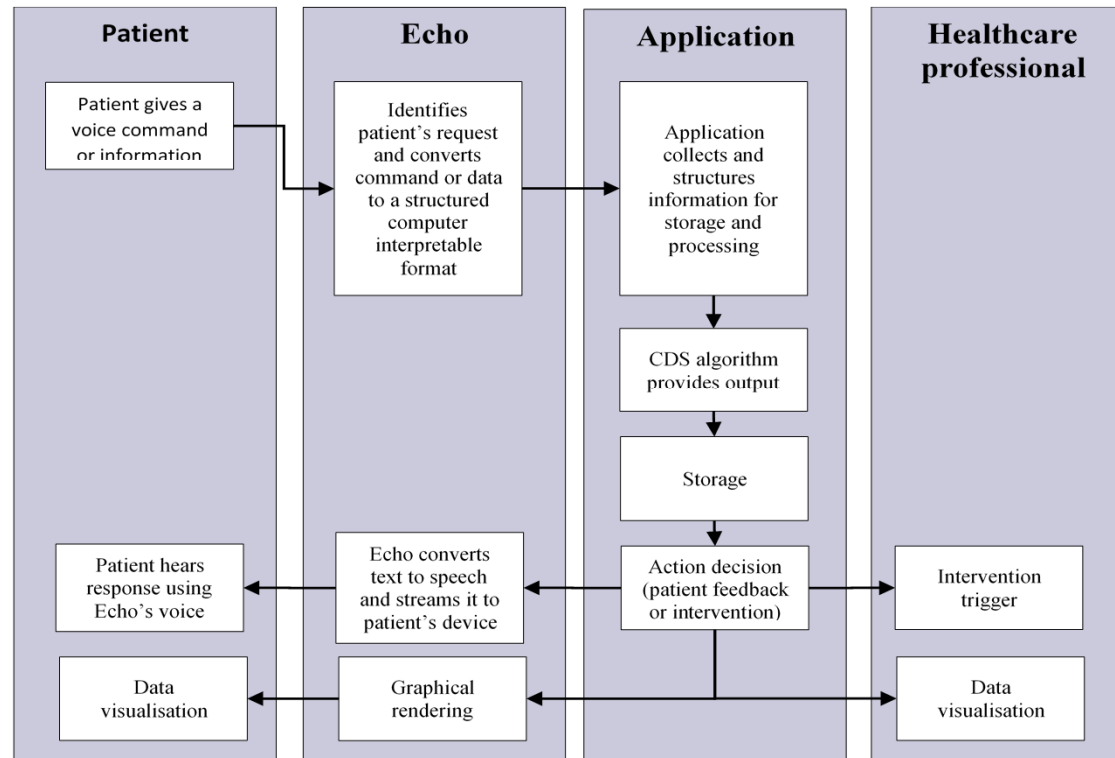
amazon echo



echo dot



Overview of the technology



Functions



- Self assessment of well being
 - Conversion of response to quantitative data
 - Trend monitoring
 - Customisable thresholds
 - Triggers based on keywords and quantitative analysis
- Clinical Decision Support (CDS) algorithms
 - BMI, diabetes risk
 - Algorithms based on measurements
 - Provides warning and advice

Functions 2



- Self-quantification
 - Collection of data sourced from the patient
 - Various measurements
 - Weight, mood, BP, sleep, exercise
- Medication adherence
 - Customised prompts by the system
 - Recording patient declared adherence (type, quantity and time)
 - Advice based on patient care needs and history
 - Notification for medication replenishment

Way forward



- Increase clinical complexity
 - Protocols implemented
 - CDS
- Integration with other sources and storage
 - Source and provide data to HER
 - eHRM (electronic staff HR system)
 - Wearable, environmental and IoT sensors
- Actions based on protocol
 - Alerts, guidance and instructions given to patient care givers
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 - Integration with healthcare system

Conclusion



- Motivated by the healthcare triple A challenge: improved safety, quality and efficiency
- Motivated by healthcare literature in self-management
- Goal: Technical proof of concept
- Successful implementation
 - Easy natural language interface
 - Ability to collect and process data
 - Ability to customise backend algorithms
 - Deliver clinical and social decision support
- Further development required
 - Backend algorithms
 - Integration with other healthcare systems, sensors and IoT
 - Predictive analytics
 - Improved CDS