Improving Exposure Notification: Technology Challenges

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Private Automated Exposure Notification “Stack”

Layer 3
- Public Health Interface
- User Interface

Layer 2
- Private Cryptographic Protocol

Layer 1
- Exposure Estimation
Improving Exposure Notification: Technology Challenges

Exposure Estimation (Layer 1)

- Range estimation improvement
  - Bluetooth, Ultra-Wideband, Ultrasound
  - Metadata processing and communication
- Risk estimation improvements
- Data collections
  - Proxemics
  - Mobility

Private Cryptographic Protocol (Layer 2)

- Privacy improvements
  - Better protection against potentially malicious actors
- Advances in private analytics
  - Support for backward contact tracing
  - Improved public health insights on super-spreader events

Public Health and User Interfaces (Layer 3)

- Reduction of barriers to adoption
  - Focus groups, feedback
  - Inexpensive, compatible wearables
- Modeling, simulation
  - Validation of models against real-world data to help public health specify optimal risk parameters

*Graphic adopted from Robin Marsden (RGM Productions), [https://youtu.be/dsf6nwvHxVo](https://youtu.be/dsf6nwvHxVo)*
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* A partial list of the PACT team members working at MIT and MGH on automatic exposure notification. Many other such teams have been working on AEN worldwide since the beginning of the pandemic.