

Open mHealth Framework

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Motivation

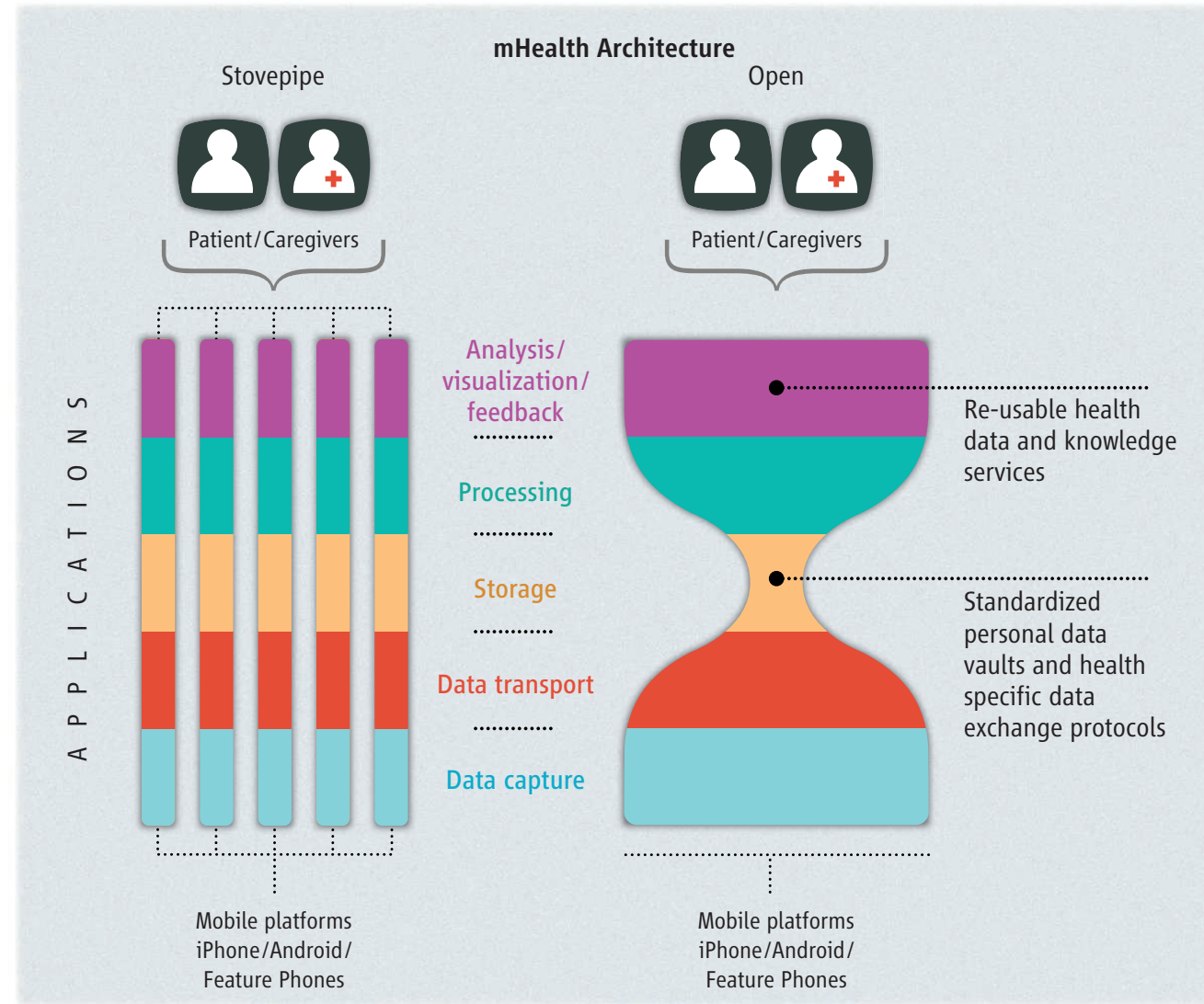
- Chronic diseases (diabetes, asthma, and obesity) account for **46%** of global disease burden
- The traditional model of **episodic care** in clinic and hospital-based settings is suboptimal for improving chronic disease outcomes
- **mHealth** technology present opportunities to enhance disease prevention and management by extending health interventions beyond the reach of traditional care
- However, mHealth is emerging as a patchwork of **incompatible** applications serving narrow, albeit valuable, needs, and thus could benefit from more coordinated development



Open mHealth

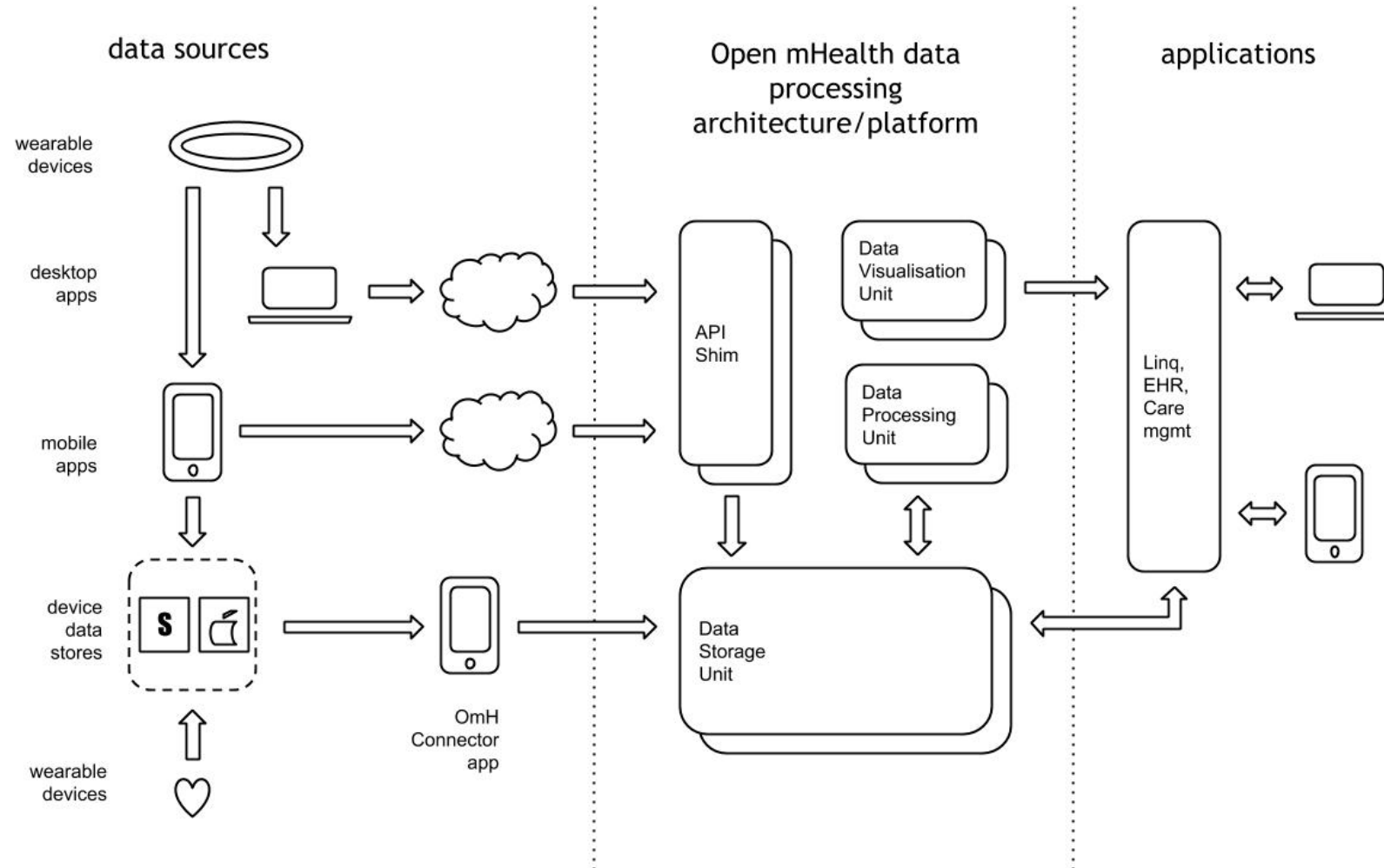
Goal

- Open architecture
 - standardized interfaces
 - standardized components
 - standardized data formats



mHealth architecture: Stovepipe versus Open. The narrow waist of the open hourglass will include at least health-specific syntactic and semantic data standards; patient identity standards; core data processing functions such as feature extraction and analytics; and data stores that allow for selective, patient-controlled sharing. Standards should be common with broader health IT standards whenever possible.

OMH Architecture



OMH Schemas

- A set of JSON standard for various mHealth data points
- Semantic standardization
- Design principles
- Templates
- Library

Sample Data

< With descriptive statistic ▾ >

```

1  {
2    "systolic_blood_pressure": {
3
4  Sample Data
5
6
7  {
8    "latitude": {
9      "value": 40.0596923828125,
10     "unit": "deg"
11   },
12   "longitude": {
13     "value": -105.21440124511719,
14     "unit": "deg"
15   },
16   "effective_time_frame": {
17     "date_time": "2013-02-05T07:25:00Z"
18   },
19   "positioning_system": "GPS"
20 }

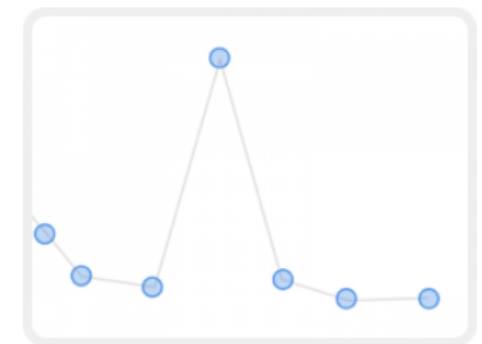
```

Architectural Components

- Data Storage Unit (DSU)
 - Micro-service (docker)
 - Oauth2 authentication
 - RESTful interface
 - POST data points
 - GET data points
- Integration of other data formats / sources
 - **Shimmer** – pull activity tracker data (fitbit, RunKeeper, etc.)
 - **Granola** – integrates to Apple HealthKit
 - **Pulse** – integrate with EHR/HL7 data
- Visualization
 - blood pressure
 - heart rate
 - ...



Blood pressure



Heart rate

Shimmer

- Can pull health data from popular third-party APIs like Runkeeper and Fitbit.
- Converts data into OMH valid schemas
- Supports
 - Fitbit
 - Google Fit
 - iHealth
 - Jawbone UP
 - Misfit
 - Moves
 - RunKeeper
 - Withings



Standardization

- Open mHealth is now part of an IEEE standardization effort
- IEEE P1752

- Standardization of
 - schemas
 - end-point APIs

- Relation to other (IEEE) standards
 - HL7 / FHIR
 - ISO/IEEE 11073 Personal Health Data (PHD)

IEEE P1752 Working Group



WE'VE GOT YOU COVERED

Digital health from start to finish. The whole stack.

1,135 Meetup Group Members

91 Schemas

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What's possible with Open mHealth?



Standardize data

You need to be able to write applications that can process and create data, regardless of where the data came from. We can help with that. Our platform is built on structured health data, which helps companies, organizations, and individuals exchange data and reuse code. It also makes the data easier to understand.

We use schemas to define the structure of health data. We've brought together top clinical experts, data scientists, developers



Open mHealth

<http://www.openmhealth.org>

Repositories 28

People 3

Projects 0

Search repositories...

Type: All

Language: All

schemas

A repository of Open mHealth schemas.

Java ★ 47 31 Apache-2.0 Updated 26 days ago



shimmer

An application for reading health data from third-party APIs.

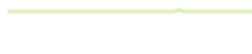
Java ★ 248 80 Apache-2.0 Updated on Apr 9



schema-library-wp-plugin

A WordPress plugin to host JSON Schema schemas.

PHP ★ 2 Apache-2.0 Updated on Feb 2



web-visualizations

A library of web visualizations for mobile health data.

JavaScript ★ 52 17 Apache-2.0 Updated on Feb 1



Top languages

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emersonf
Emerson Farrugia

jeroen
Jeroen Ooms

jojenki
John Jenkins

Now – it's your turn

- Download and install the [omh-dsu-ri](#)
– using docker
- Play around using postman
- Try to generate and load sample data