T-110.6000

Internet and Computing Forum

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Quattro Folia Oy

Founded 2012
  Started with focus on helping elderly to stay home longer
  Cloud service to combine different service providers related services
  That did not fly…

Pivot 2013
  Changed to health care digitalization
  Building Cloud based personal health record system
  Focusing on revolutionizing Diabetes self-care
  Founded our own Diabetes clinic
  Running a pilot, negotiating customer deals
  Building next version of the service

Staff: Full time 12 persons, hourly 3 persons
  Engineering 6+1, Product mgmt. 1, Research 1+1
  Regulatory 2, Marketing 1, office help (0+1), CEO

Health care is huge business

382 million individuals with Diabetes at Annual Cost of appr. 6000€ (USA)

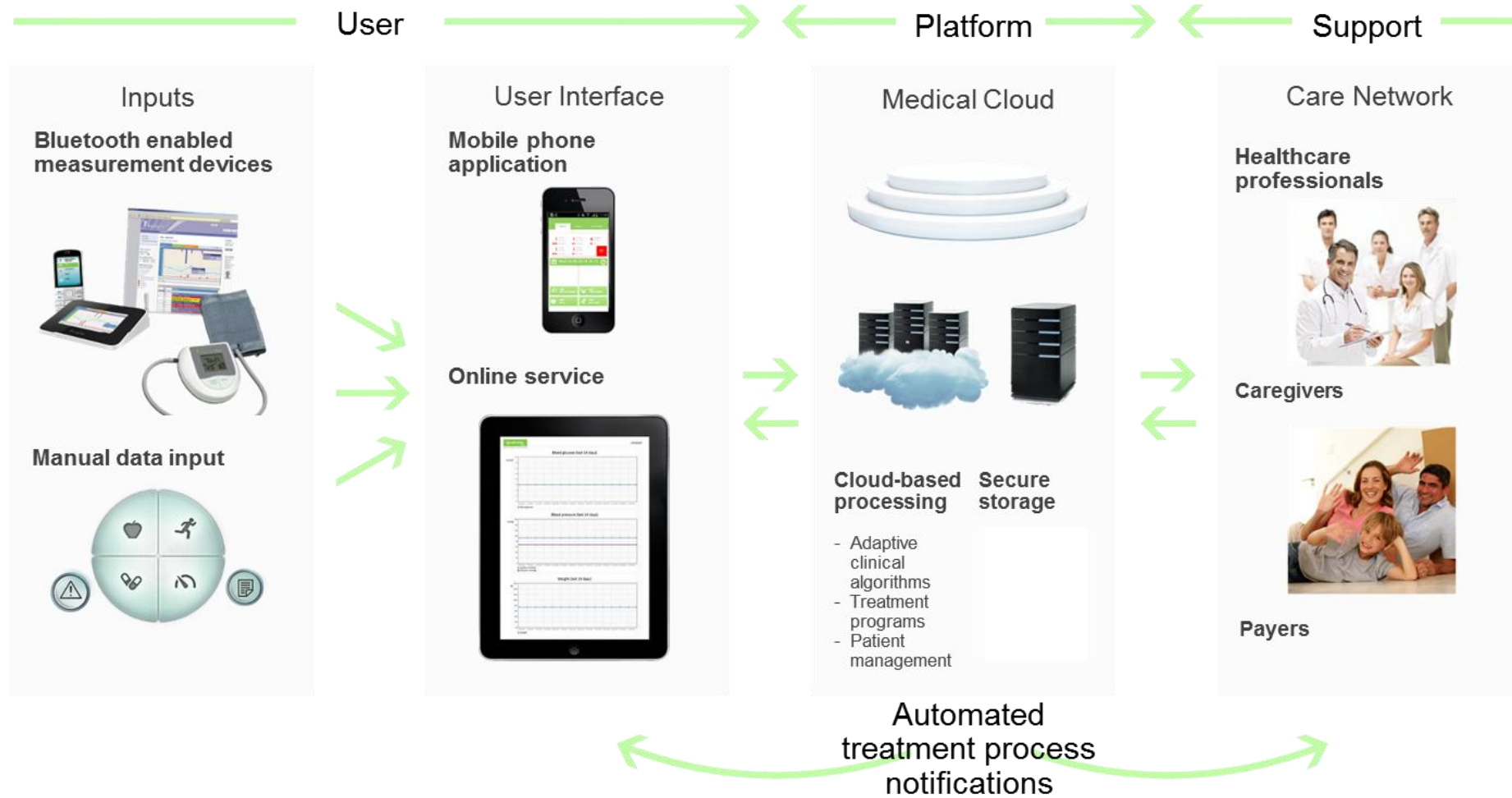**235 million** individuals with Asthma at Annual cost of appr. 3000€ (USA)

20-25% of the adult population has the Metabolic Syndrome

€100B+ problem each

Quattro Folia solution

Regulated medical device development

Requires audited
Quality Management System which
complies with MDD & FDA
requirements based on

EN ISO 9001:2008

EN ISO 13485:2012

*Development, Maintenance, Sales and
Provisioning of Medical Software*

Doctors prescribe medicines of which they know little,
to cure diseases of which they know less
in human beings of whom they know nothing.

Voltaire, 1694 - 1778

Due to increased complexity and fragmented information, healthcare is not far from that still today.

Major Disruption in Healthcare

From Institution owned health data *to consumer centric* Personally controlled Health Records (PHR)

- Facts based Quantified self data
- Data ownership – Data availability – Data sharing
- Learning

Shift of Medical Device & Diagnostics *analytics to the cloud*

- Cost of Cloud services reduced dramatically
- Facilitated by timely On-line data and increasing number of connected medical devices
- Instant adaptive analytics on individual and over population (Medical data & non medical data)
- Reduces risk of false diagnoses

Health Care Professionals *role changes* dramatically

- Diagnosing and Consulting from "One MD's brains" to adaptive big data analytics of individual and over population
- Health Care Professionals will be coaches
- Diagnoses based on better data and analytics of the individual

Major Disruption in Healthcare

Health Care *Democratization*

    High quality care anywhere independent of where you live

    Centralized specialists available anywhere

Huge *cost savings* potential and *higher care efficiency* at the same time

    On-Line timely and factual information of individual improves efficiency less slag time

    Consumer has bigger role

    Better evidence based diagnoses and care accuracy

Competition

In wellbeing and diabetes
High number of mobile apps
Cannot be used in healthcare (as no medical devices)

Very few medical devices
Expect incumbents to whom cloud service is just add-on

Some technologies used...

WEB technologies
   HTML5 / JS with Angular
   Scala, Play FW, oAuth2, REST, FHIR, HL7
   MySQL db

Android
   Native (JAVA)

iOS
   Native (Objective C)

Challenges so far...

Open source – a blessing and an issue
- Used largely – careful with the licenses
- Unsupported OSS is a problem
- Medical device perspective – SW of unknown prevalence

Ramping up own R&D
- Started with outsourced SW development
- Difficult to control and maintain quality processes
- Ended up to have fully in-house development

Agile
- Not traditional for medical device development
- Standards based on waterfall thinking (only now becoming updated for agile)

Questions?

Thank you!