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Recent Technological Developments in Hungary

ITware | Biró Attila

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Short History of ICT in Hungary

- ICT (Information and communication technology) is a **booming sector in Hungary**
- **10-12% of the Hungarian GDP comes from the ICT sector** (and the digital economy in total accounts for 21-22% of the country's GDP)
- Hungary has produced **the highest growth rate in the digital economy in the EU**
- **Around 150 000 employees work directly in the sector** (digital economy total is 400,000, or 15% of all Hungarian employees)
- Hungary ranks **third place in the European Union** according to the rate of ICT employees within the population
- **18% of total Hungarian export is presented by software** and ICT services, which contain high added value originating from Hungary
- **ICT products make up the second highest proportion** of exports of all countries in the OECD
- Hungary has **the second highest per capital ICT expenditure** in the CEE region

Hungarian scientists in ICT & other abstract sciences

- **John van Neumann**: The operational principles of the IAS Computer he created in 1951 still determine the way a PC works today.
- **John G. Kemeny**: the man behind the user-friendly BASIC programming language.
- **Marcell Jánosi**: inventor of the predecessor of the 3.5" floppy disk
- **László Biró**: inventor of ball point pen
- **Ernő Rubik**: Rubik's cube
- **Dénes Gábor**: inventor of Holography

Japanese business interest in Hungary

- Currently **149 Japanese companies active in Hungary,** 49 of them has manufacturing facilities. They provide **employment for over 25 000 Hungarian citizens**.
- Japan is the **3rd biggest foreign investor in Hungary** after USA and Germany
- in past two years Japanese companies **invested over 1 billion EUR** (ca 1280 oku yen) in Hungary
- latest strategic agreement is with **Alpine Electronics**
- Apart from them Hungary has **6 other strategic agreements** with Japanese companies: **Suzuki, Bridgestone, Zoltek, Ibiden, Takata, Nissin Foods**)

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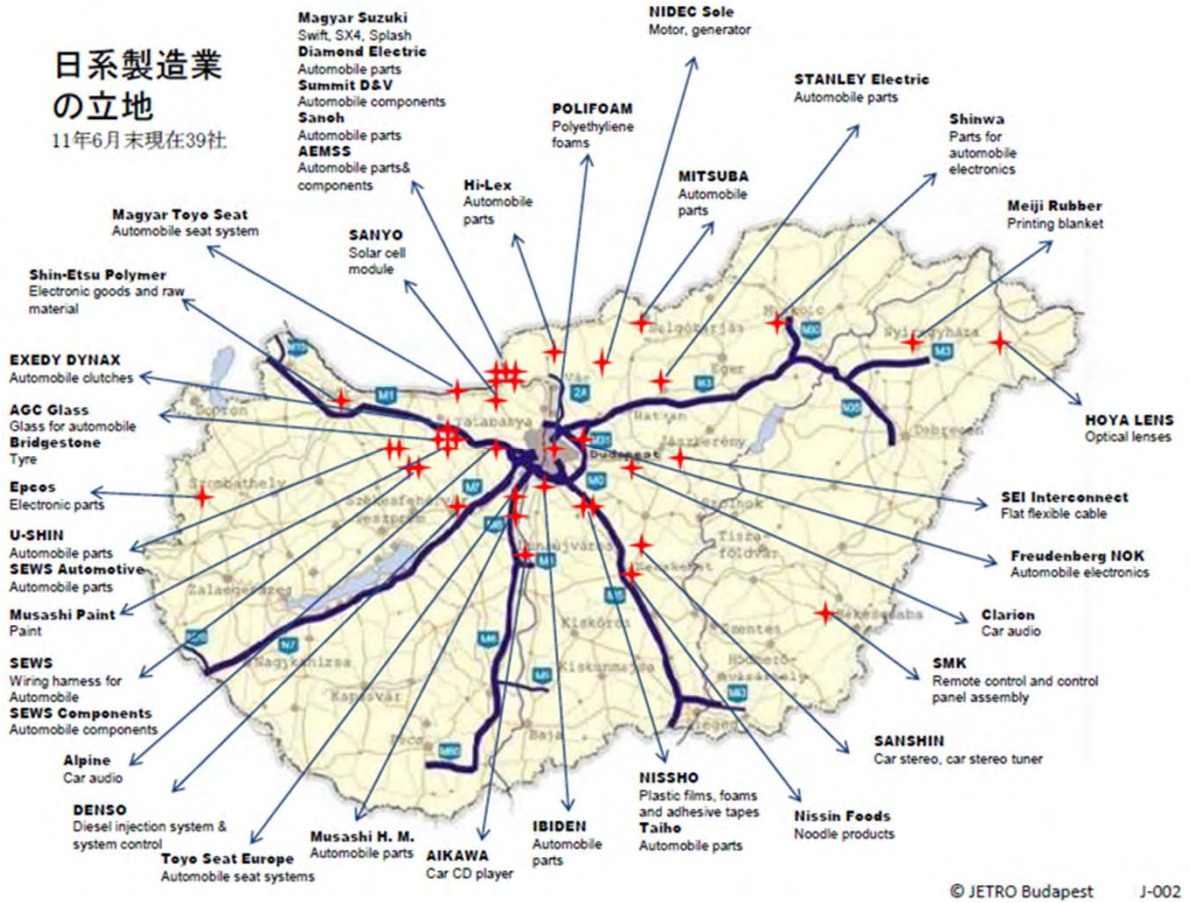
Japanese companies in Hungary



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ITware

* **Founded: 2001**, works for Japan since 2008
* 100% **Hungarian ownership**
* Continuous **domestic / international presence**
* **Yearly turnover**: ~**2 million EUR**
* Staff: 60+ (**50 software engineer**)

Certifications:

* **ISO-9001:2008**
* **PMP** (Project Management Professional)
* **CSM** (Certified Scrum Master)
* **CPO** (Certified Product Owner)
* **SFC** (Scrum Fundamental Certified)
* **OCPJP** (Oracle Certified JAVA SE Professional)
* **ISTQB** (International Software Testing Qualifications Board)

Software development:

- JAVA, J2EE, JSP
- Javascript, AJAX
- C, C++

Mobile dev technologies:

- HTML5, CSS3, PHP, Flash, RoR
- iPhone, Android, C#, Windows RT

Databases:

- ORACLE, MS SQL, PostgreSQL, MySQL, OLAP
- WEBlogic, Glassfish, Tomcat, JBOSS

Integration technologies:

- SOA, UML, RUP

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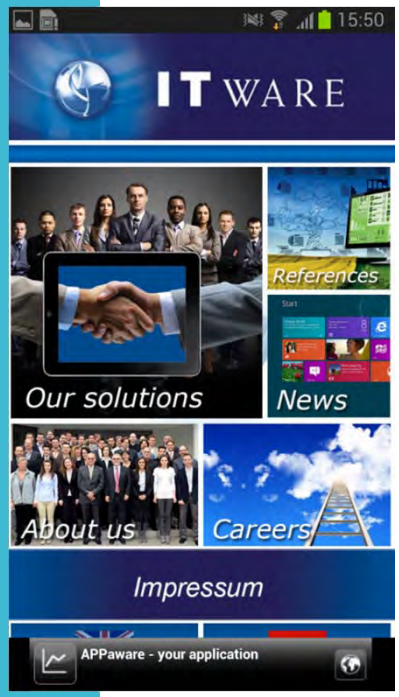
Technology as a Service



- CRM and Billing Systems
  Software integration
- Mobile apps on Android, IOS, Win8 RT platforms
  App translation between platforms
- Data measurement systems
  Embedded systems
- Web based self service portals
- Production tracking and managing systems,
  Fleet Management system
- Mobile TV, Connected Crowd
- TnM contracts, Project Management

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ITware history in Japan

- **2008** first M2M project in Japan
- **2011** ITware exhibits at EU Gateway Programme Information and Communication Technologies in Tokyo
- **2012** smart phone demos for Japan about mushroom production scheduling
- **2013** smart phone demo for Japanese e-healthcare application
- **2014** video processing app
- **2014** ITware participates in Waseda University 1 year managerial training program
- **2014** Exhibit on ITWeek Spring in Tokyo
- **2015** Participation of European Union Human Resource Training Program (HRTP) for Japan
- **2015** representative office opens in Shinagawa, Tokyo
- **2015** ITware exhibits at ITWeek Autumn in Makuhari Messe

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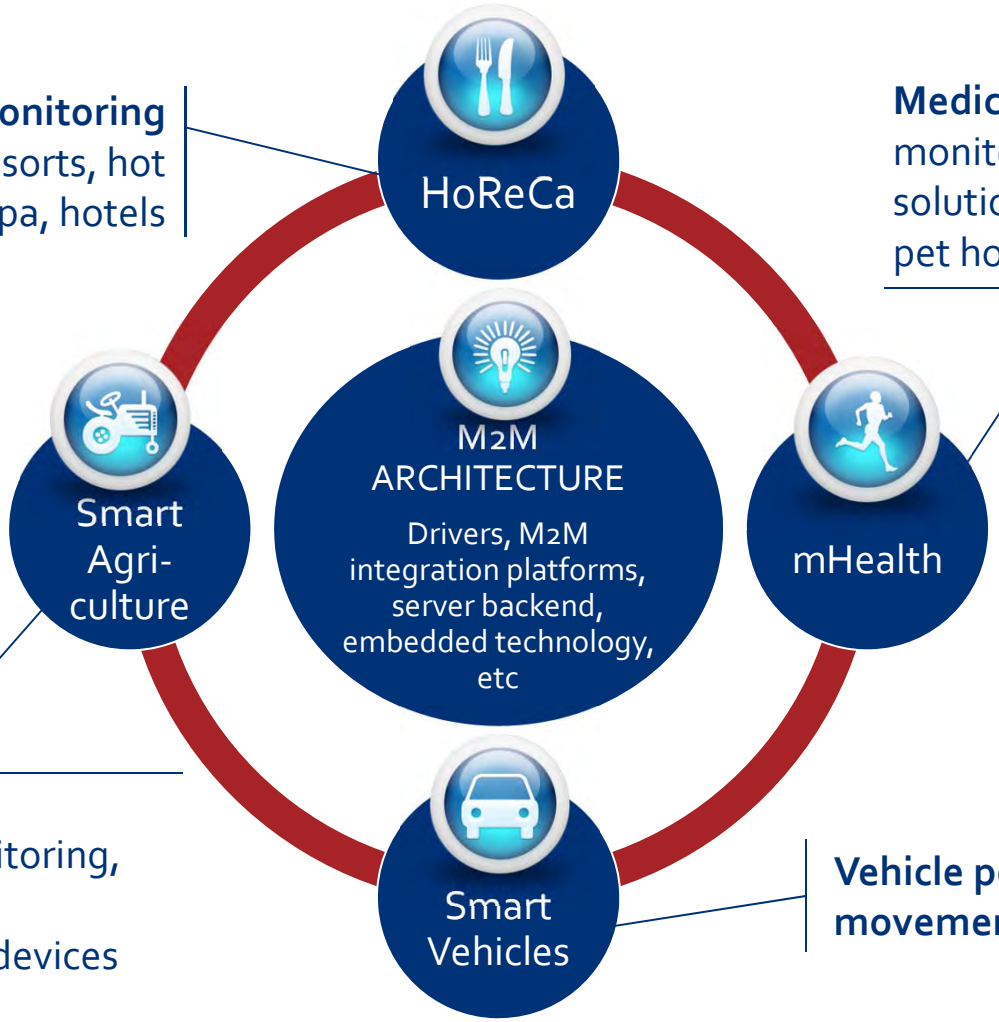
Custom IoT/M2M and Mobile Apps



Environmental monitoring solutions for ski resorts, hot spa, hotels

Medical condition monitoring smartphone solutions for patient care, pet hospitals and sports

Control system, Environmental monitoring, Production planning Solutions for smart devices

Vehicle position and movement tracking solutions

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Mobile Development

Native and/or Hybrid Applications

Mobile Applications

- Users like it more
- More trusted to spend money
- Can be optimized better for phones
- Better performance
- Better ergonomics
- Available offline

Mobile: Native or Hybrid App?

- Apps are much like your desktop software
- Only 22 minutes per day are spent in the browser, with the balance of time focused on applications.
- In April, eMarketer predicted that by 2017, 25% of online retail transactions will take place on mobile.
- Studies continue to show that users feel more comfortable making large dollar purchases using a native app rather than the mobile web
- An app can target the specific limitations and abilities of each individual device much better than a website can while running inside a browser
- An app is developed for a single screen size or a smaller range of sizes, making it easier to design an outstanding interface and controls.
- Resources and data can be stored locally in a mobile app

Custom vs APPaware or Hybrid apps

APPaware or **hybrid app** development

Custom mobile app development

Development time needed for the 1st Platform (eg. iOS)

Development time needed for the 2nd Platform (eg. Android)

Development time needed for the 3rd Platform (eg. Windows)

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Mobile Applications

CreateSmartApp.com

Available on the App Store

Google play

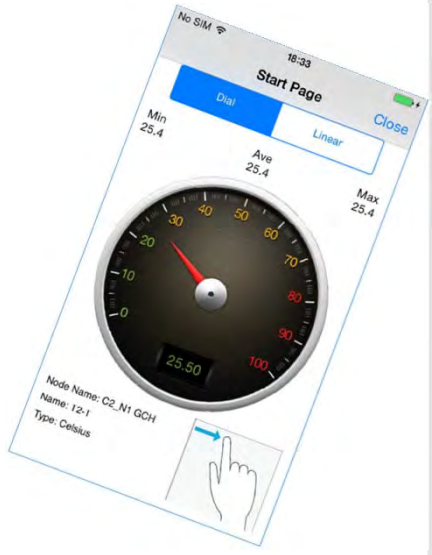
APPaware

Smart Mobile App creator platform

APPaware is ITware's web based mobile application creator framework for developers

- it creates real iOS/ Android/ WP applications
- **works in a drag and drop way**

Apart from basic computer skills, it does not require IT expertize or programming background, and **can be used by anyone** to create native mobile apps



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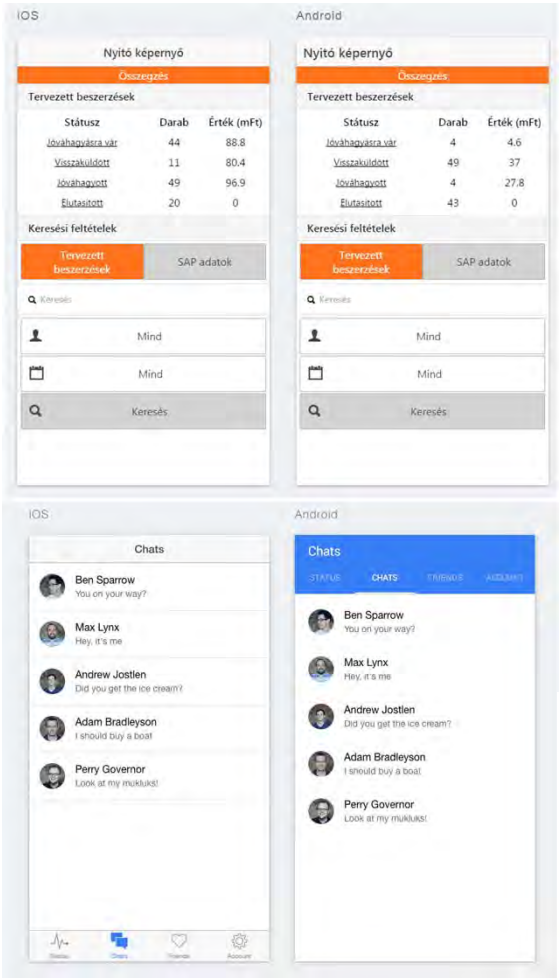
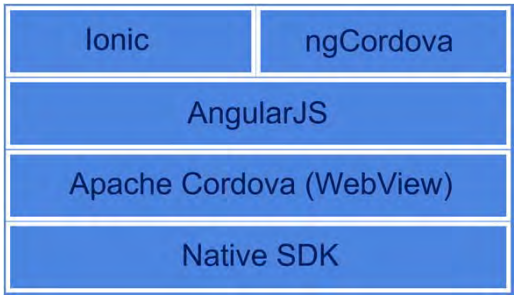
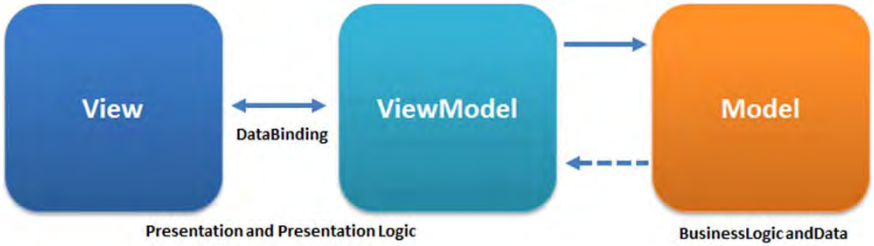
Hybrid Mobile Applications



- OpenSource mobile development frameworks
- Using standard web technologies
- Web wrapped in native layer
- Access to native APIs
- One code base
- Many platforms (Android, iOS, WP, Blackberry)



- AngularJS



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IaaS for FBT

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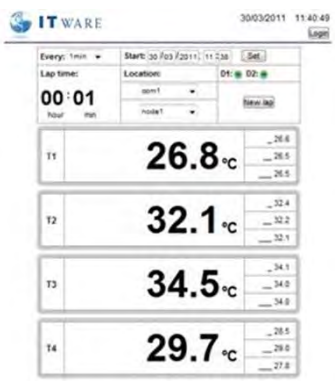
IaaS

- Innovative, **cloud-based remote data collection system DAQ**
- Configurable through a **web based interface**
- Measuring **devices at remote locations**
- **Accessible anywhere**, through the web
- Intelligent, continuous and **event-triggered reports**
- **Offline mode**
- Get collected data in JSON format
- **Secure encrypted data transfer**.
- HTTP and SMTP communication with remote server
- Stores read but unsent data in memory or on its flash drive.
- Support for +50 different types of sensor devices including the RTR-50 wireless sensor network
- Flexible network configuration (DHCP/Static IP, Dynamic/ Static DNS)



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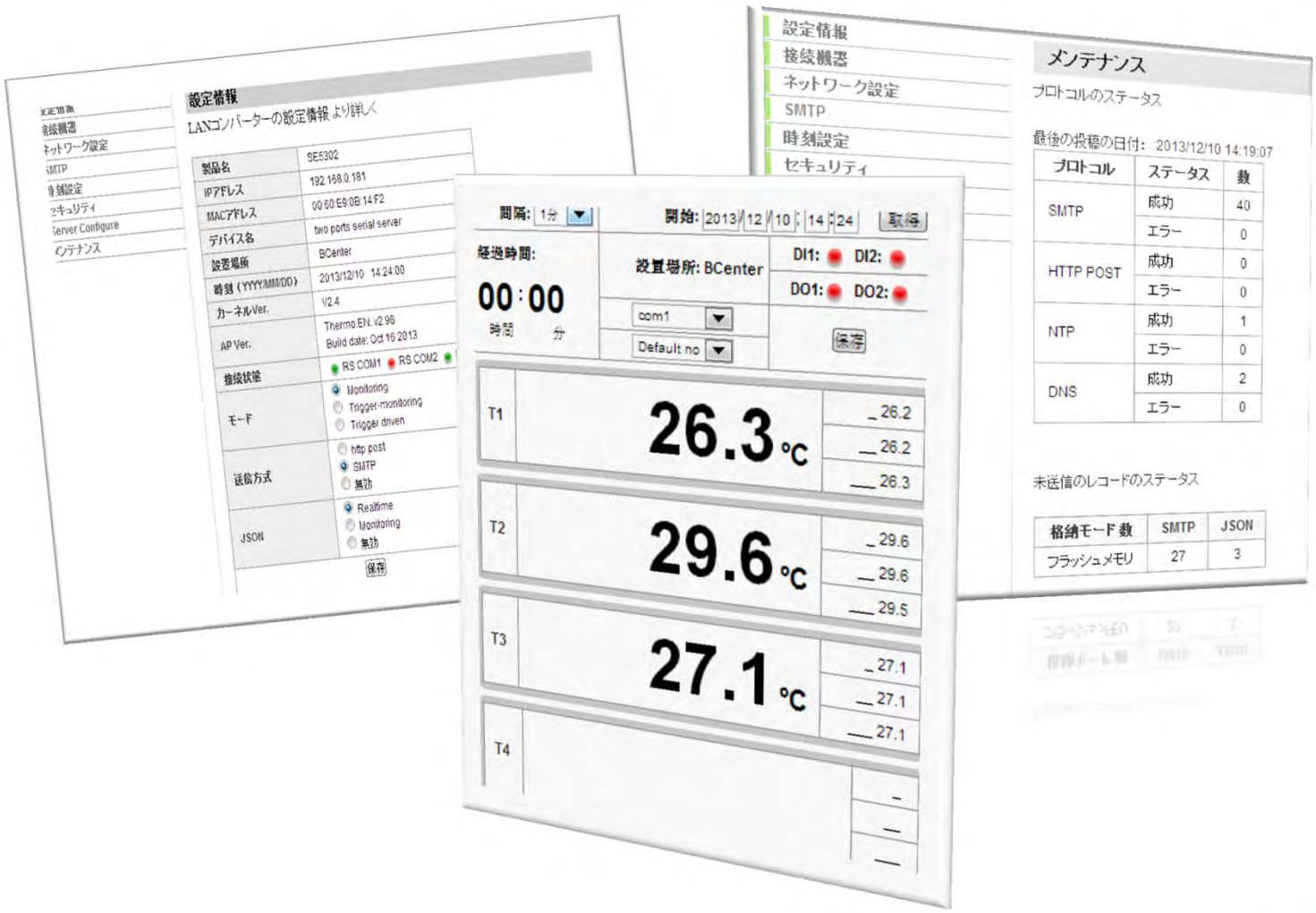

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Custom IoT/M2M for Japanese company

- Over 50 sensor devices integrated from several maker
- Measuring over 20 types of data
- Real time
- Cloud based

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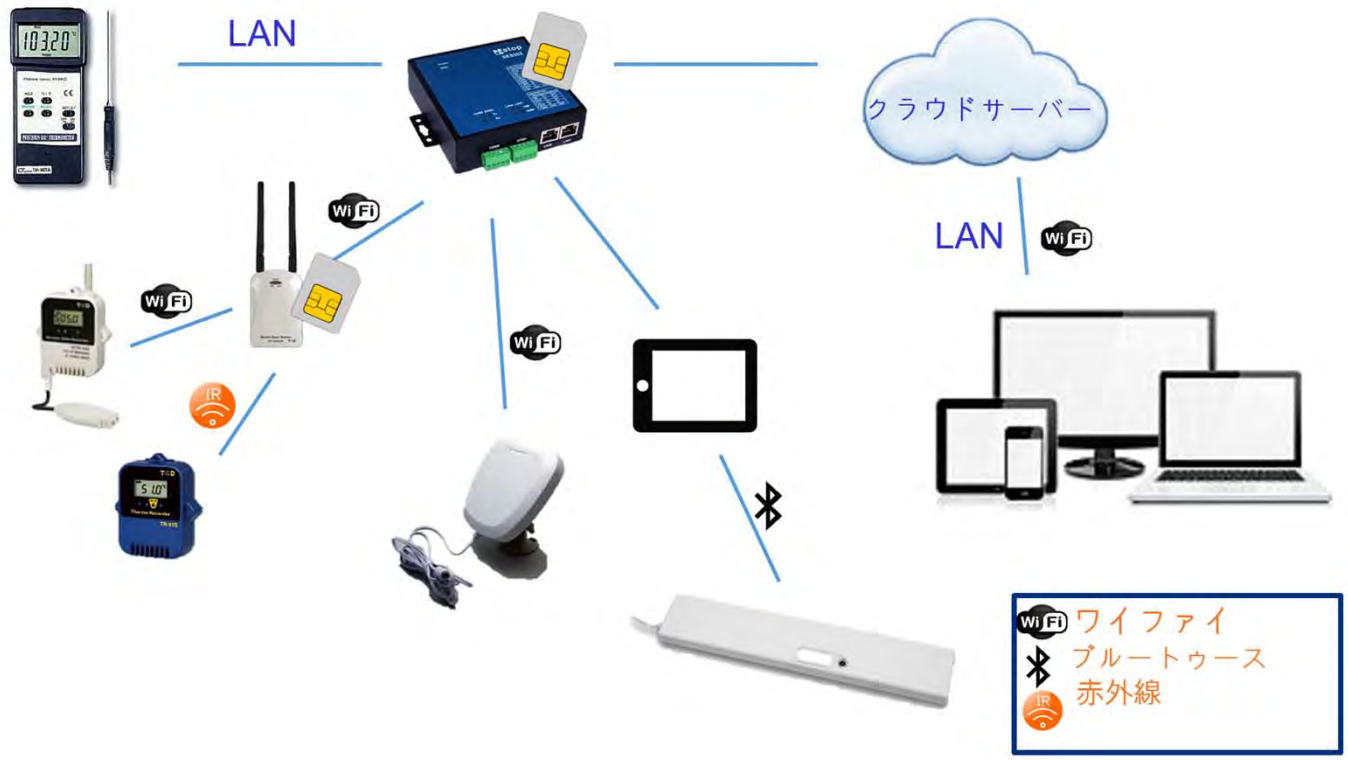
Custom IoT/M2M IaaS Solutions

システムの構造



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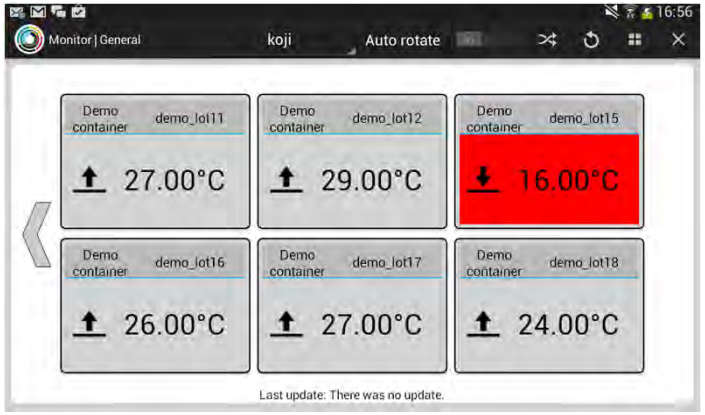
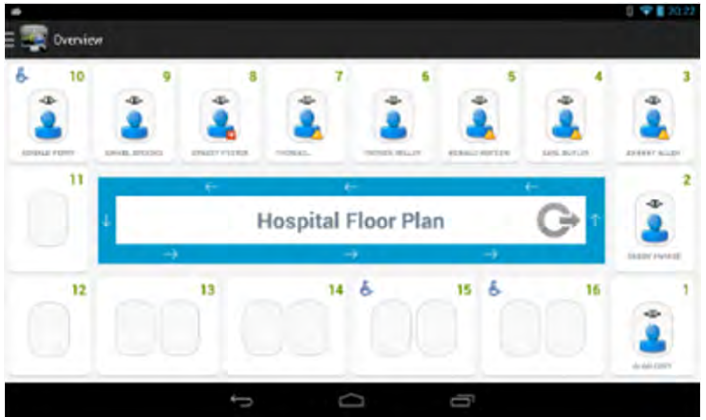
Custom M2M /IoT apps

- Visualize collected data
- Real time / monitoring mode
- Different M2M/IoT applications





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R+D

VRS Technology Development

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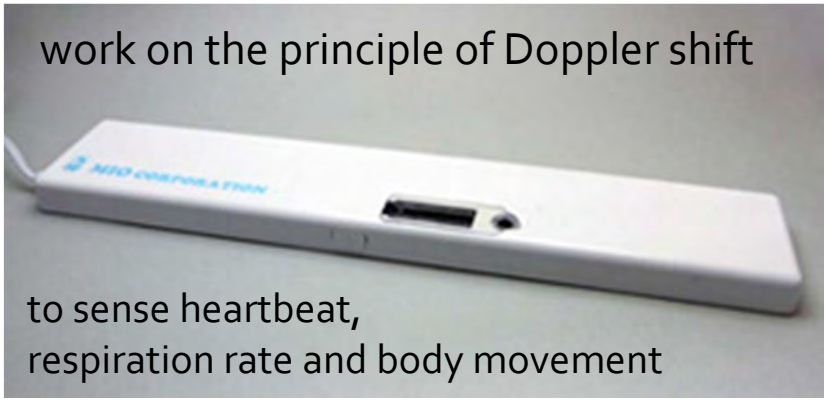
2.4GHz Doppler

non-contact vital sensor

LS series



Bed sensor type

- The used patches may cause discomfort
- Leads and sensors can obstruct free movement
- Leads to irritation and distress
- In case of severe burns or injuries, difficult to attach
- Short battery lifetime

MS series

High sensitivity wall mount type

- Non-invasive, continuous monitoring
- Body position and movement
- Heart rate
- Breathing

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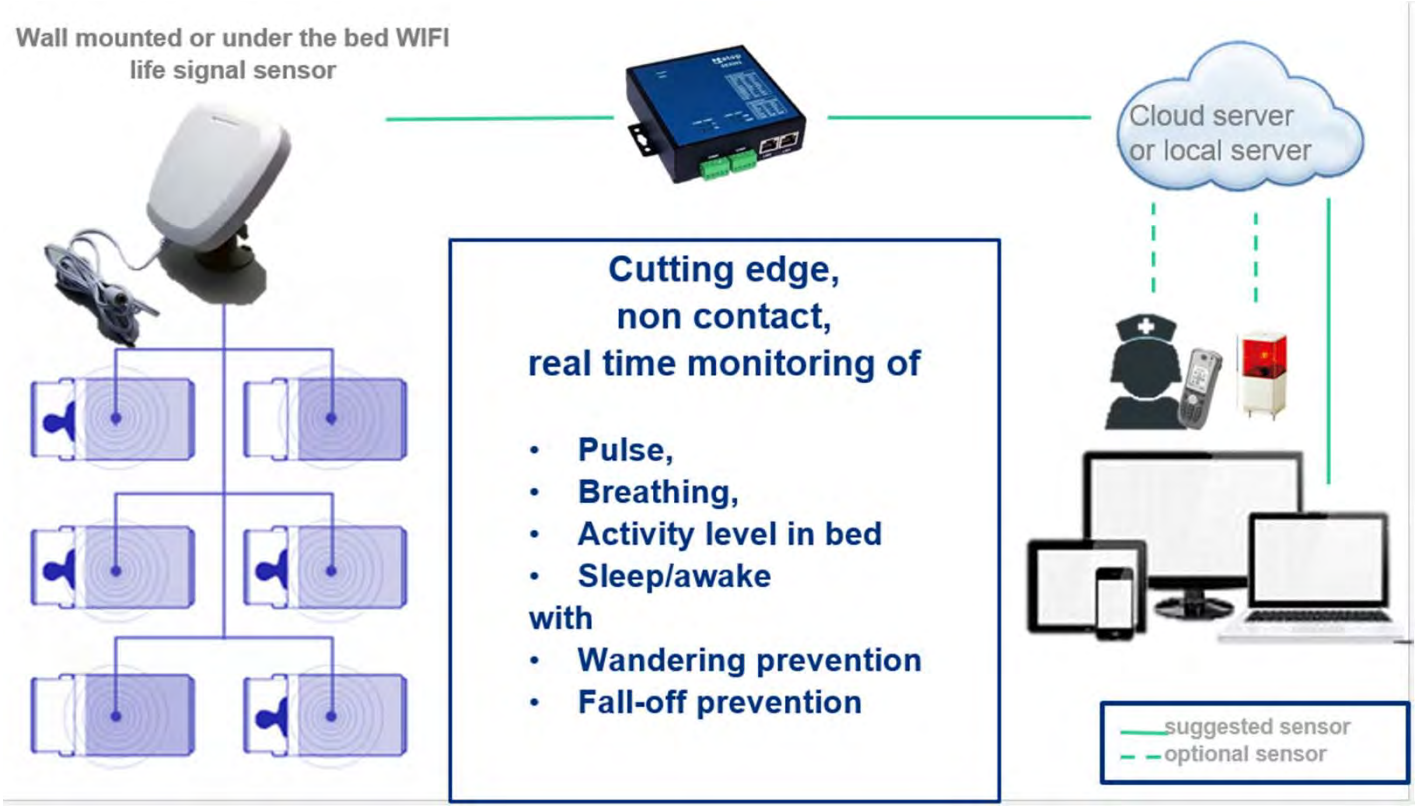
Nursing homes



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Nursing homes

Possible to connect to hospital alarm system, send alarms to nurse phones.

Integrability with other sensors and devices.

With easy to use tablet app with dashboard and charts for nurses and doctors for constant access to real time as well as historical patient conditions.

Possibility to connect to hospital patient database

Reach real time and historical data on any platform (PC, smartphone, tablet)

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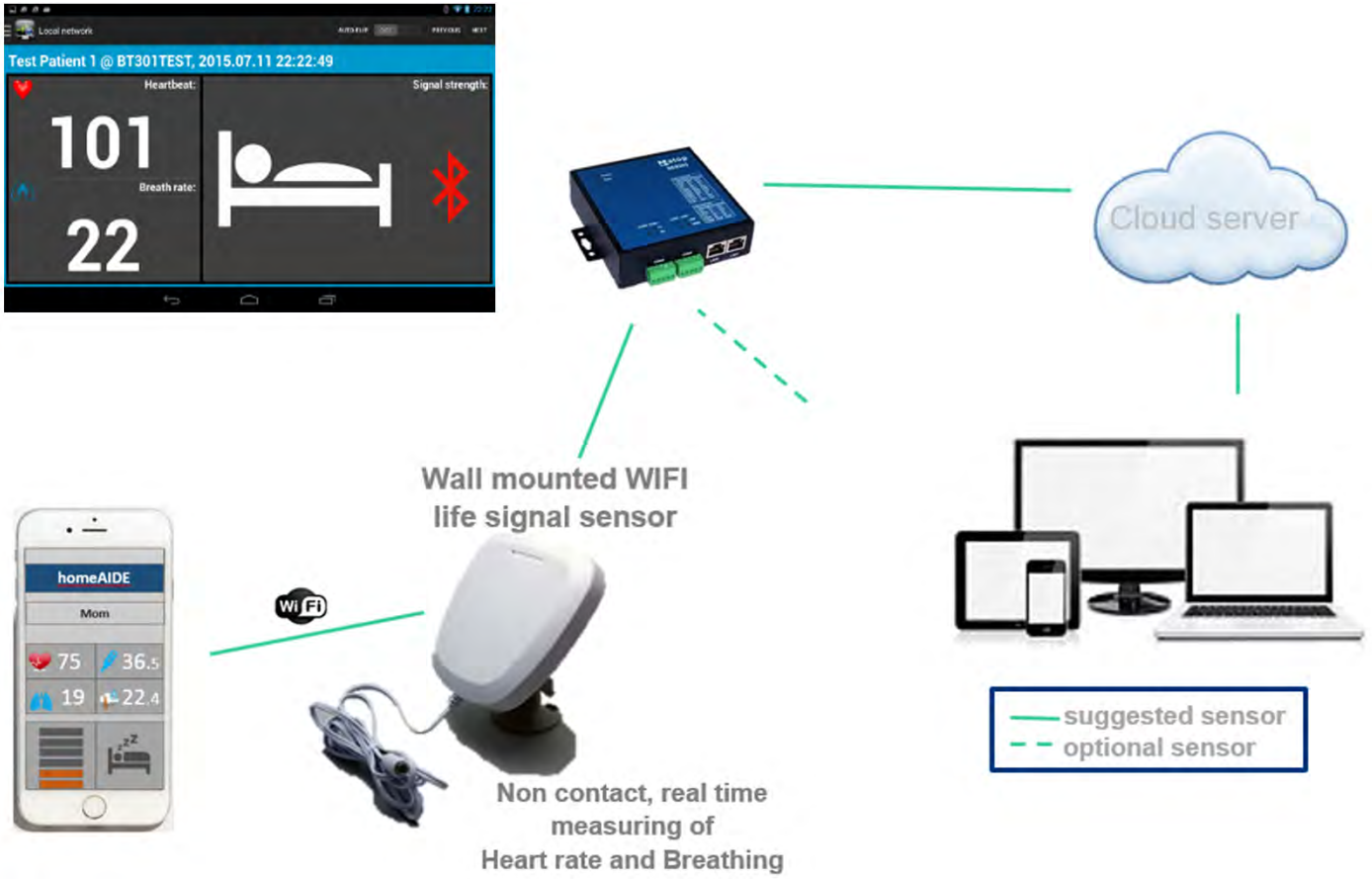
HomeCare Service Institute

Elderly person living alone and his family members



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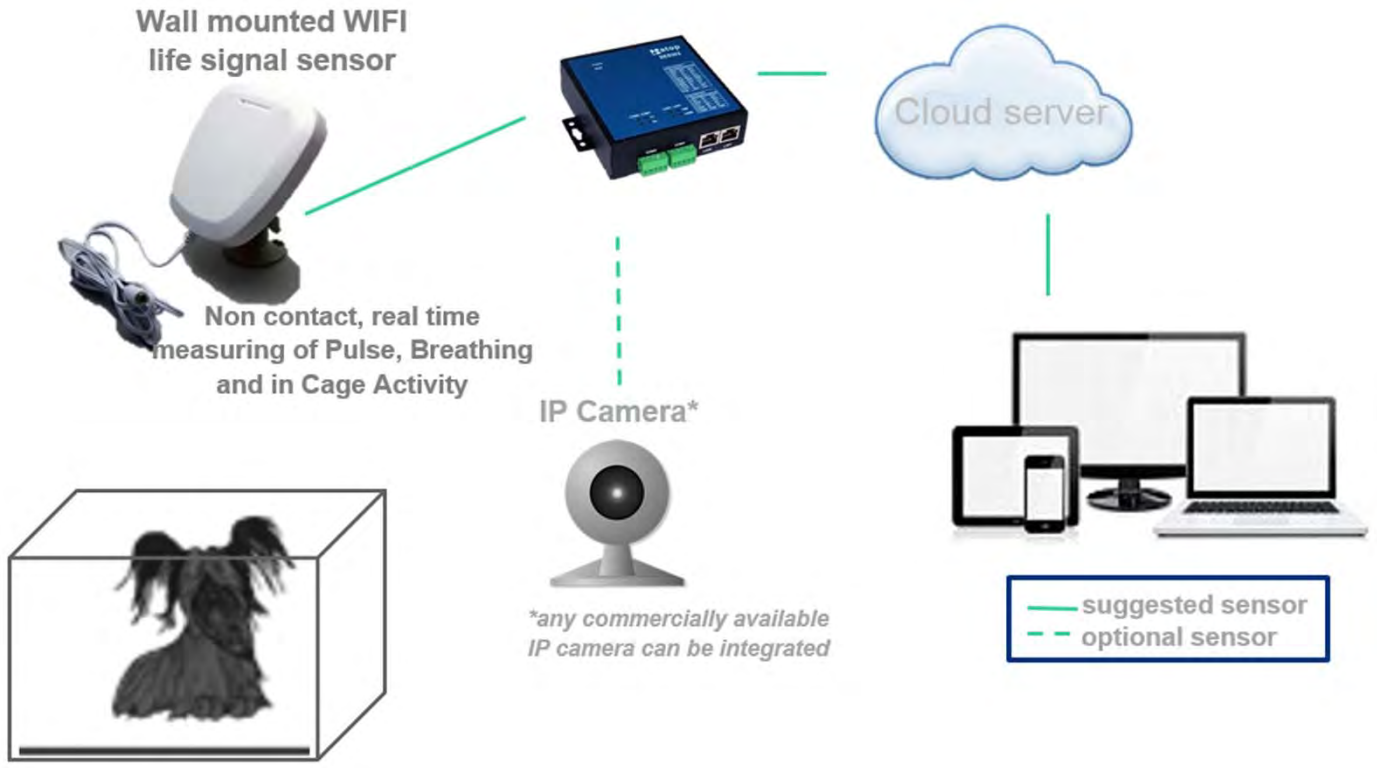
Pet hospital After surgery recovery cage



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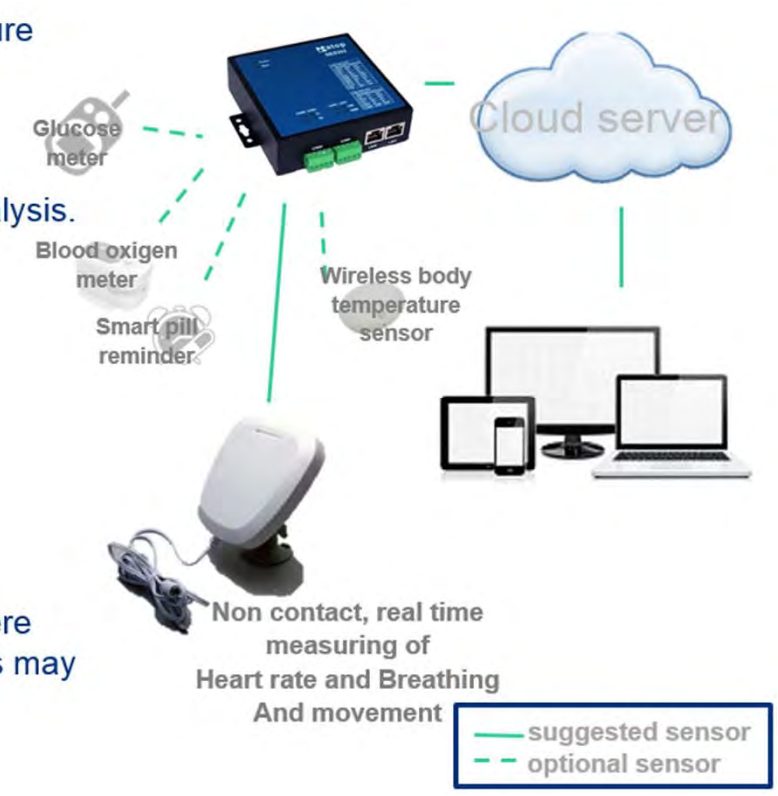
Medical research

Combine freely with wireless body temperature meter, glucose, oxigen meter or even pill reminder.

Log data automatically 24hrs/day, use ready made charts, export your data for further analysis.

Research

- pet after-surgery recovery,
- apnea,
- Alzheimer disease,
- elderly conditions
- patients with severe burns
- or with compromised immun system, where even patches of contact measure devices may cause infections
- effect of medicine on life signal, etc



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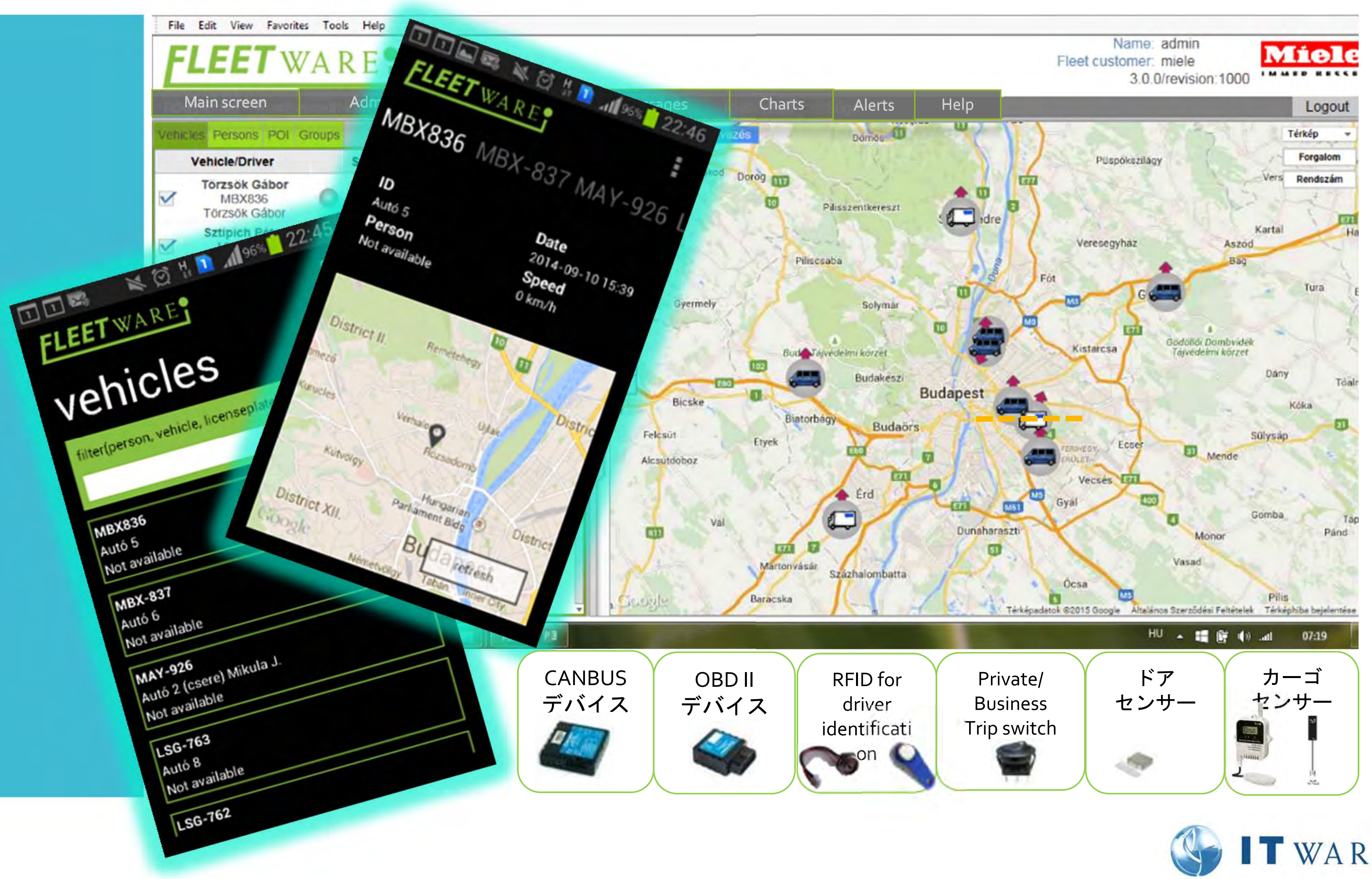
Real time fleet monitoring



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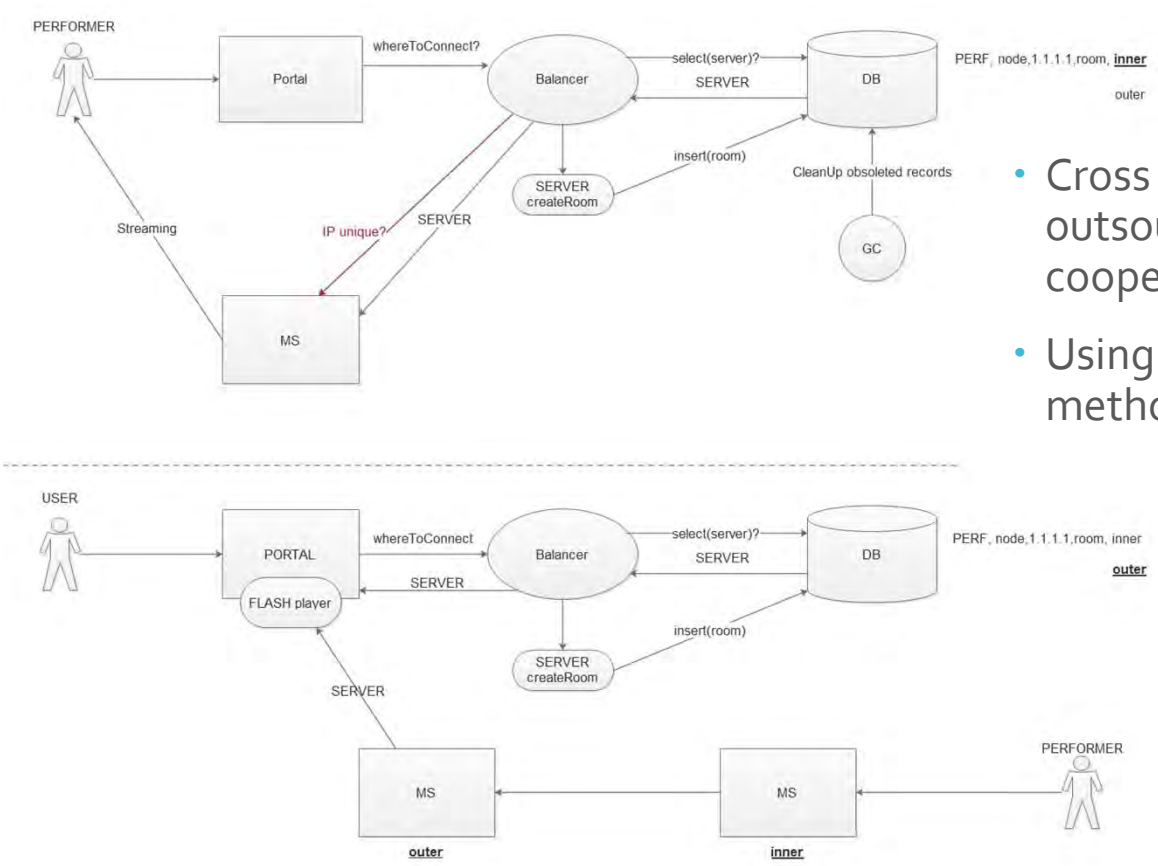
Chat room load balancing

Community support chat

DOCLER reference



- Cross country remote outsourcing and cooperation
- Using Scrum methodology

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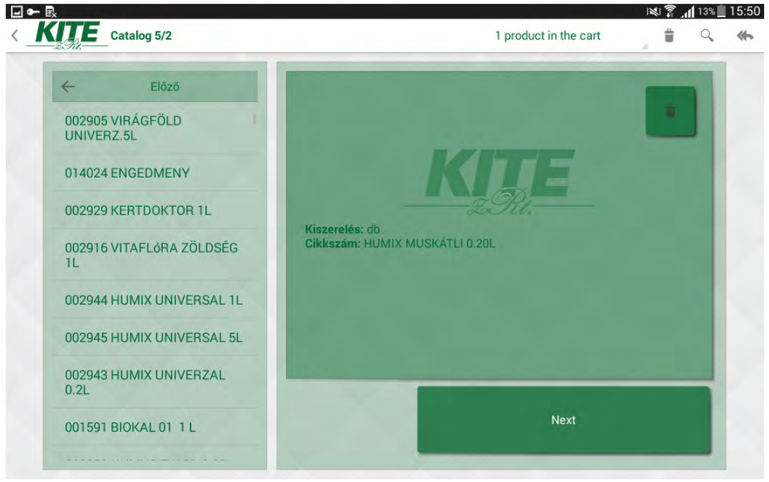
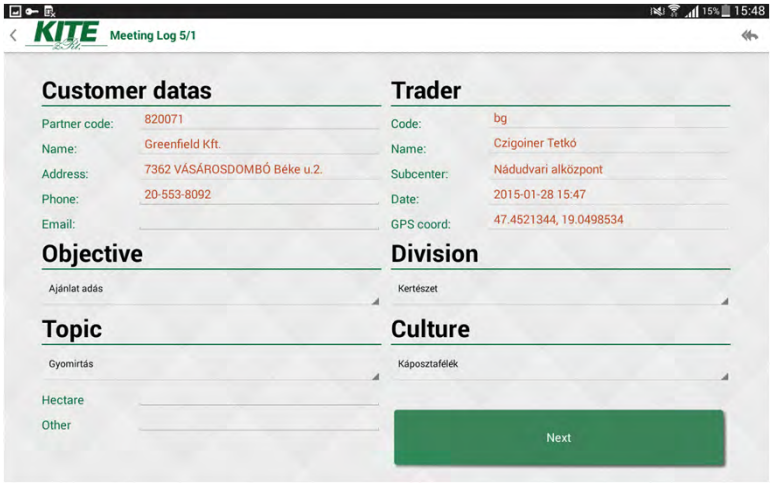
Use Case

eAdministration

Complete Agriculture app

Reference





- **Digital signature** of contract
- Make and upload field status photo
- **Realtime order** supplies
- Register/update customer info
- **Data Sync** background system

- Client: **Android**
- Server: **Apache, PHP**
- Communication: **RESTful API**
- Persistence: **Relational DB, dBase**
- Client-Server Sync: **Download + Upload**
- Offline Mode
- Branding

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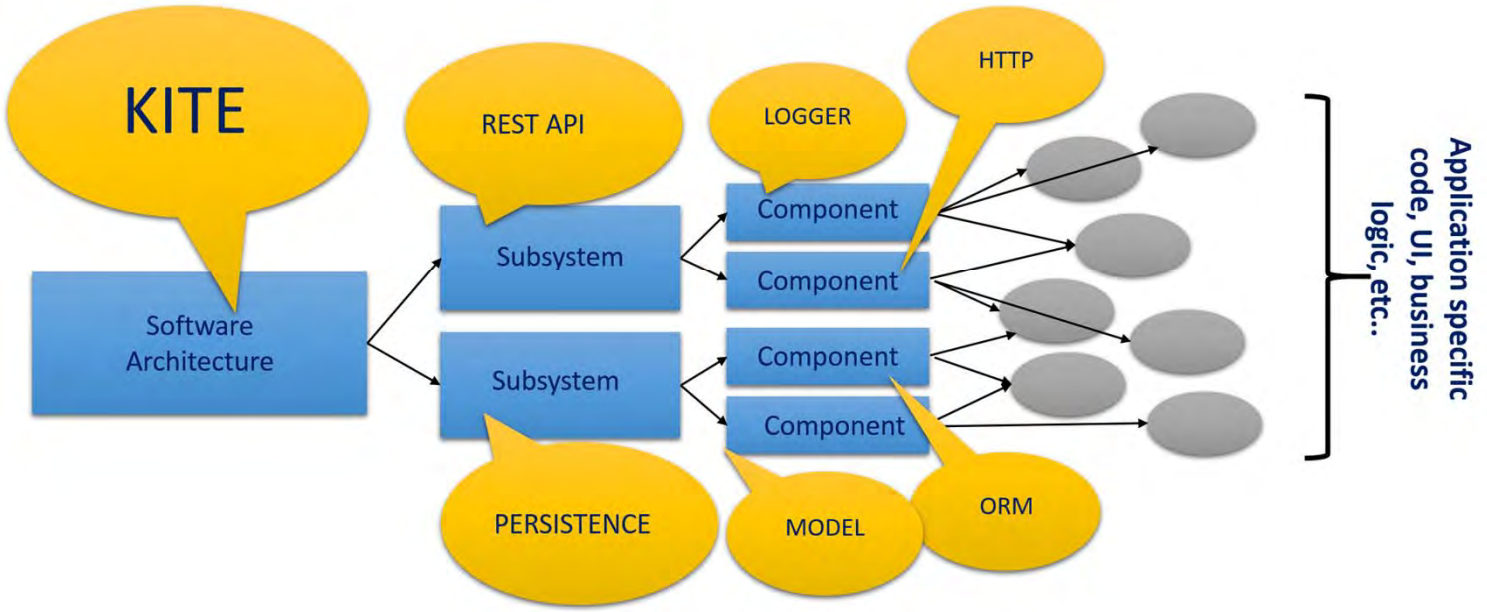
Software Architecture



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Architectural patterns

- Blackboard system
- Event-driven architecture
- Implicit invocation
- Layers
- Microservices
- Model-View-Controller
- Presentation-abstraction-control
- Model View Presenter
- Model View ViewModel
- Multitier architecture (three-tier or n-tier)
- Naked objects
- Operational Data Store (ODS)
- Peer-to-peer
- Pipe and filter architecture
- Service-oriented architecture (SOA)
- Broker Pattern

Software Architecture

What technology we need?

- REST API client → org.apache.http
- JSON parsing → com.google.gson
- ORM → android.content
  - Data modell
  - Persistence → android.database
- Synchronization → android.content
- Android Framework! → android.*

What functionality we need?

- Integrated into Android Framework
- Stable
- Fast
- Reusable!
- Extendable!

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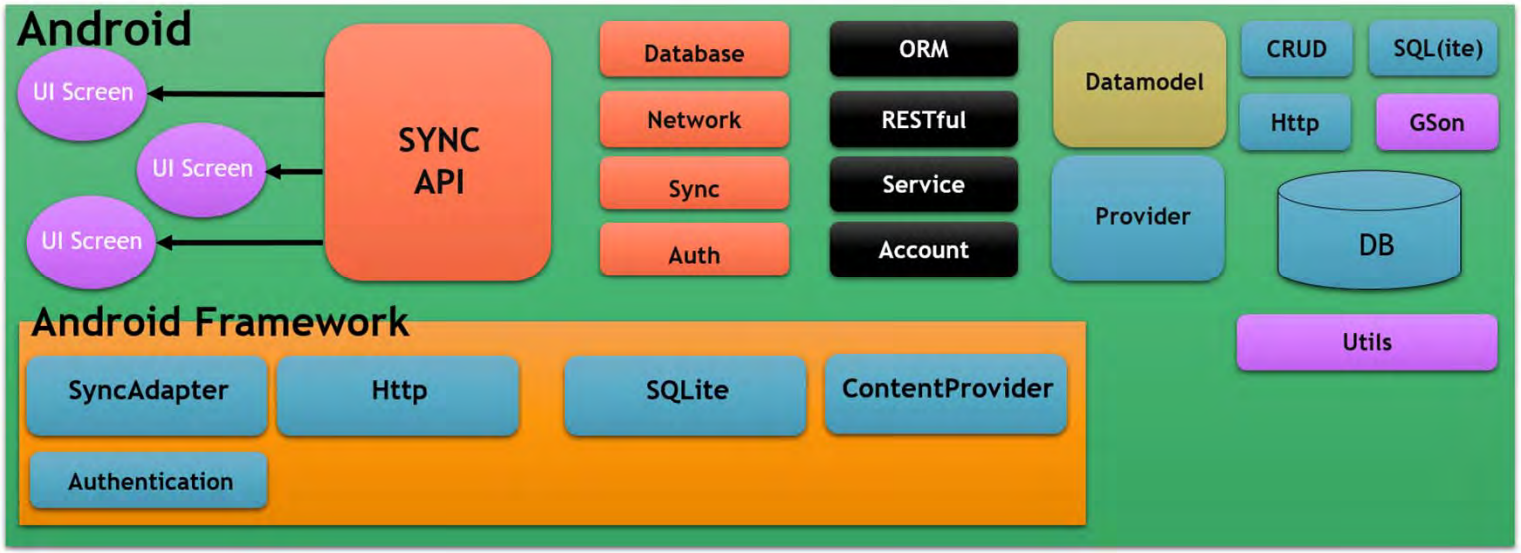
Software Architecture

Step #1

Implemented architecture of the **Synchronization API** in the Android client application



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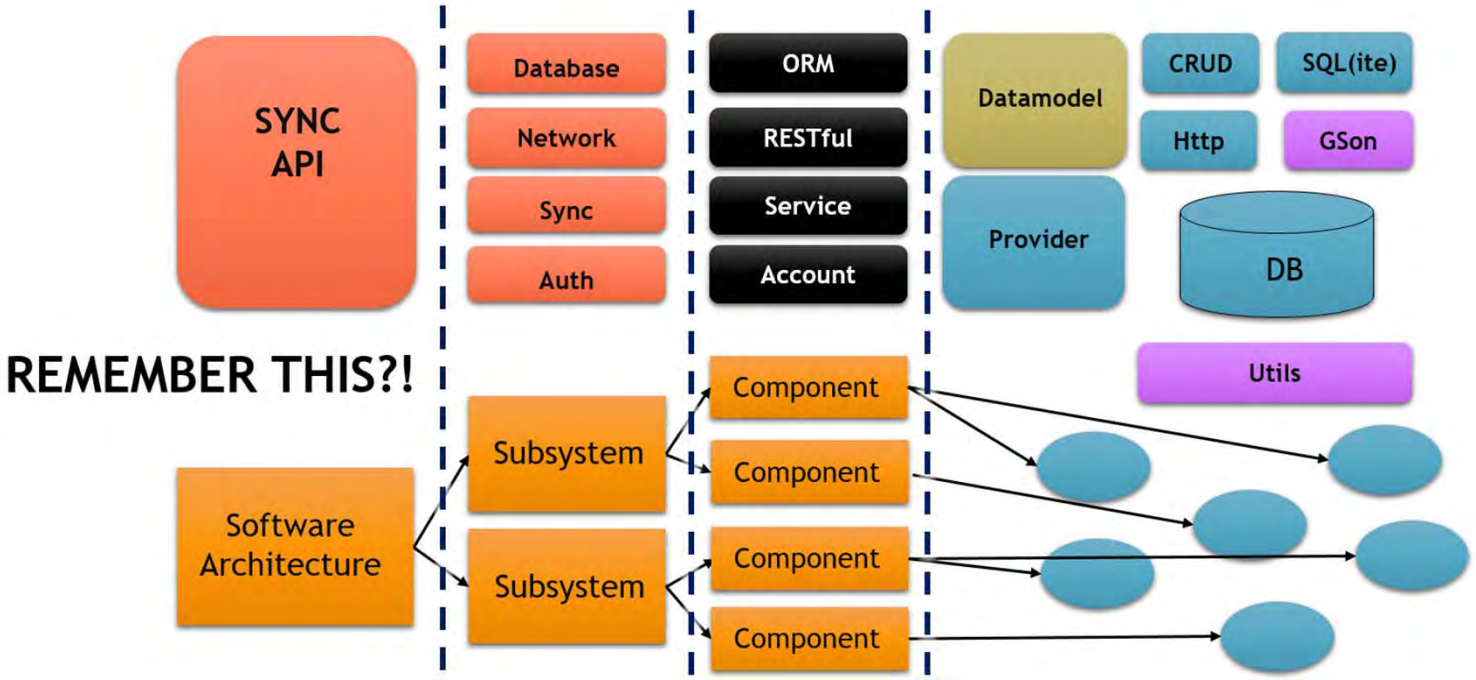
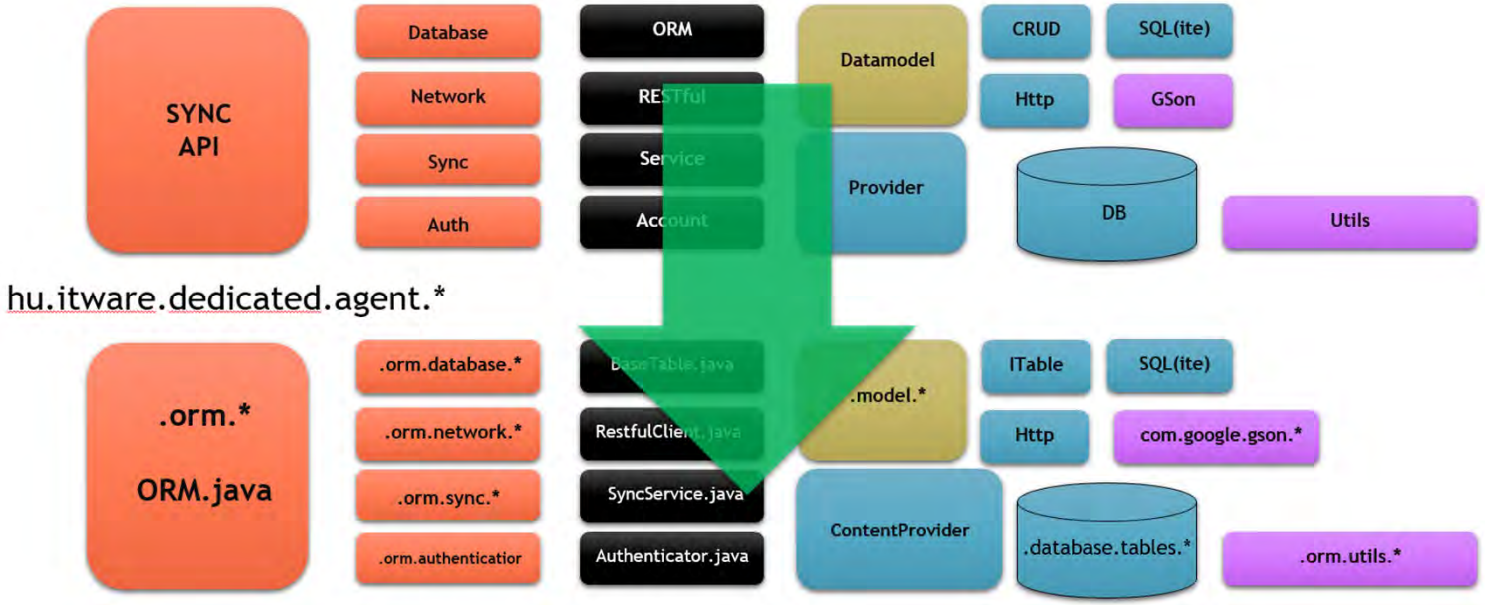
Software Architecture

Step #2



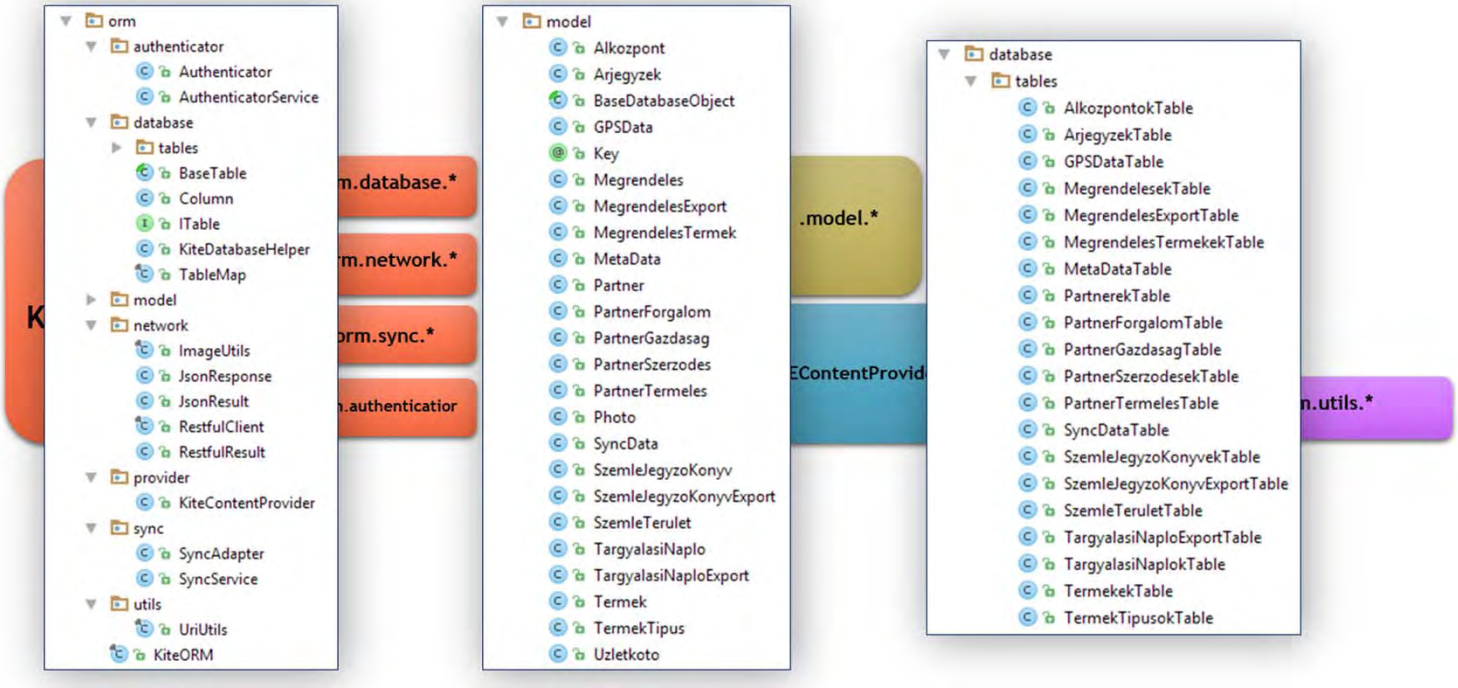
Software Architecture

Step #3



Software Architecture

Step #4



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What kind of API

- Use **Android suggested APIs**
- **Easy extendable**
- **Send Broadcast notifications** to UI about the sync events
- Can be **re-used by another projects**
- **Change data model** is EASY
- **Useful helpers**: **HTTP**, **JSON**, Database, Images, Files

Contact for technical questions

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