

MEDIATEK

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Outline

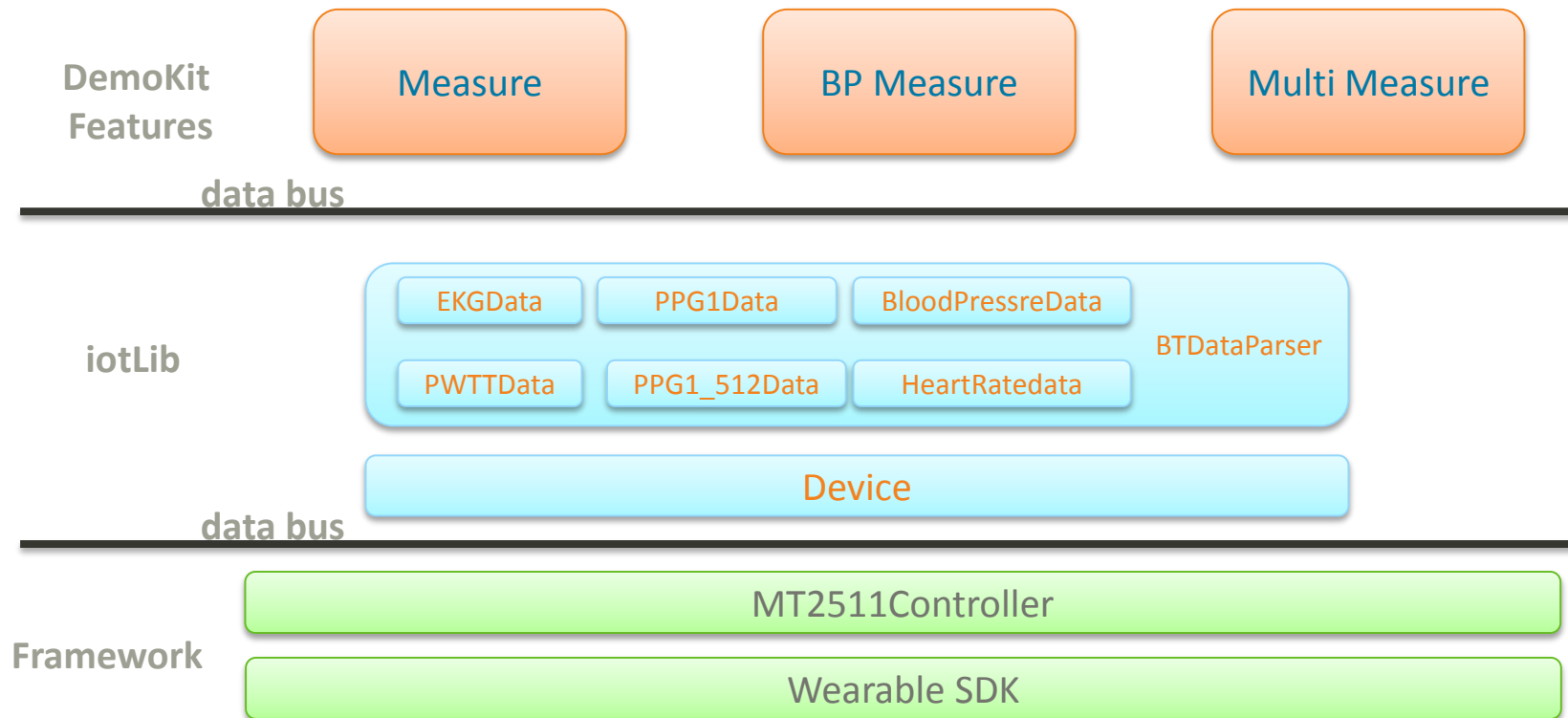
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Overview

Overview

- **MT2511 Health Module** bases on MT2511Controller@Smart Device, could receive feature data(Heart Rate/Blood Pressure/PWTT) and signal raw data (EKG / PPG1 / PPG1 with 512hz) from device.
(Note: receive signal raw data only in APK SPP mode.)
- It provides the following features:
 - Measure (Heart Rate)
 - Blood Pressure Measure
 - General Mode
 - Personal Mode
 - Multi Connect

Architecture



How to Use

Add DemoKit Module to eclipse workspace

- Import appcompact_v7/support_design/mas-chart/DemoKit to your eclipse workspace
 - appcompact_v7/support_design are google UI component.
 - mas-chart is mediatek chart component.
 - DemoKit project include:
 - iotLib: Data Transfer & Bluetooth features
 - BTData & DataParser: Data format module @ libs/DemoKit_Lib.jar
 - DemoKit: MT2511 UI features

Integrate with MT2511Controller

- Create AdapterDevice just as the below.

```
new AdapterDevice(applicationContext, new BTDataParser())
```

- Sample Code:
DemoKit\src\com\mediatek\mwcdemo\custom\BTDeviceFactory.java

Receive data and show Data on UI

- Use RxBus to receive data in UI View.

Sample code :

```
_subscriptions.add(RxBus.getInstance())  
.....toObservable(HeartRateData.class)  
.....observeOn(AndroidSchedulers.mainThread())  
.....subscribe(new Action1<HeartRateData>() {  
.....@Override public void call(HeartRateData heartRateData) {  
.....int hr = heartRateData.get(HeartRateData.FIELD_BPM);  
.....String bmp_view_value = String.valueOf(hr);  
.....mTxtHeartRate1.setText(bmp_view_value);  
.....}  
.....}));
```

- HeartRateData.class is the bio-sensor data class, currently we supported HeartRateData / BloodPressureData / PWTTData / EKGDData / PPG1_512Data / PPG1Data.
- Sample code are under **MeasureFragment** class.

Data Format

- All data type extend from [BTBaseData].
- User can use BTBaseData.get(int index) method, get the filed as user need.
- Sample Code:

```
int hr = heartRateData.get(HeartRateData.FIELD_BPM);  
  
@Override public void call(BLEHeartRateData heartRateData) {  
    mTxtHeartRate2.setText(String.valueOf(heartRateData.getValue()));  
}  
  
@Override public void call(BloodPressureData bloodPressureData) {  
    showBPMeasureResult(bloodPressureData.getRawData());  
}
```

Data Format

- EKGData
 - A int array with length = 12 of EKG raw data
 - The EKG data are recorded in 512 hz.
- PPG1Data
 - A int array with length = 12 of PPG1 raw data
 - The PPG1 data are recorded in 125 hz.
- PPG1_512Data
 - A int array with length = 12 of PPG1 raw data
 - The PPG1 data are recorded in 512 hz.

Data Format

- HeartRateData
 - HeartRateData.FIELD_BPM // the heart rate value
 - HeartRateData.FIELD_STATUS // the status of the measured value, represent the confidence level
 - HeartRateData.FIELD_TIMESTAMP // the measured time
- BloodPressureData
 - BloodPressureData.FIELD_SBP //measured systolic blood pressure result value
 - BloodPressureData.FIELD_DBP // measured diastolic blood pressure result value
 - BloodPressureData.FIELD_HR_BPM // measured heart rate value
- PWTTData
 - FEATURE_TYPE = 0: int array represent the PWTT interval of the blood pressure measure result
 - FEATURE_TYPE = 3: int array represent the personal model of the blood pressure calibration process

SNR Computation

- SNR is comparison result of the level of signal to the level to noise.
- SNR Class: DemoKit\demoKit\com\mediatek\mwcdemo\snr\SNRResult.java
- Sample Code:
DemoKit\demoKit\com\mediatek\mwcdemo\fragments\BPMeasureFragment.java
...
`//insert high pass filtered input to the lib when raw data received`
`double s_hpf = mECGFilterService.filter(data_ecg_512_mv);`
`mECGSNR.inputHPFSignal(s_hpf);`
...
`//when the measurement is finished, compute the low pass signal array with convolution function.`
`//compute the SNR result afterwards.`
`hpfSignalList = mECGSNR.getHPFSignal();`
`allLPFSingalList = mECGFilterService.conv(hpfSignalList);`
`mECGSNR.computeECG512SNR40(allLPFSingalList);`



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