## IoT:

# remote update service

**Introduce:** service for remote firmware update of controllers in the IoT project

### **Components:**

- 1. Mobile application
- 2. Controller firmware
- 3. Service software

#### Features of the service:

- 1. Languages: Java, C/C++
- 2. Platforms: Android, Java EE
- 3. Business server: Java EE server
- 4. Embedded libraries: TLS/SSL library, WiFi library, IoT communication library, standard libraries from the manufacturer of microcontrollers

#### Features of firmware of controllers:

- Optimized for the amount of ROM and RAM memory used (microcontroller has limited resources - this is a requirement of the business customer)
- 2. Adapted to the used interface (Ethernet, WiFi or GSM)
- 3. RAM memory is a time-shared resource (for different tasks and subtasks)
- 4. If communications are interrupted during the update process, the old version of the firmware is retained
- The text representation of the data for updating is used this is a requirement of the business customer

## **Service flowchart:**

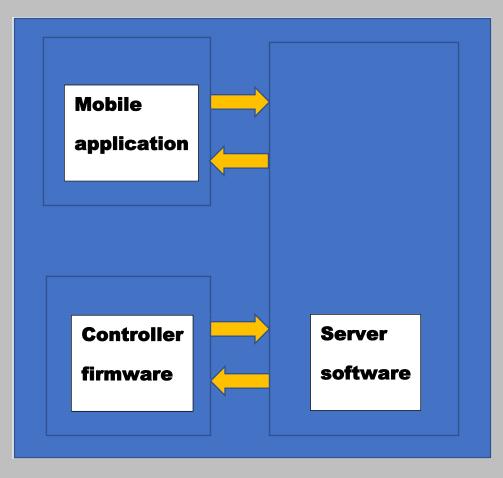


Figure 1. Update request

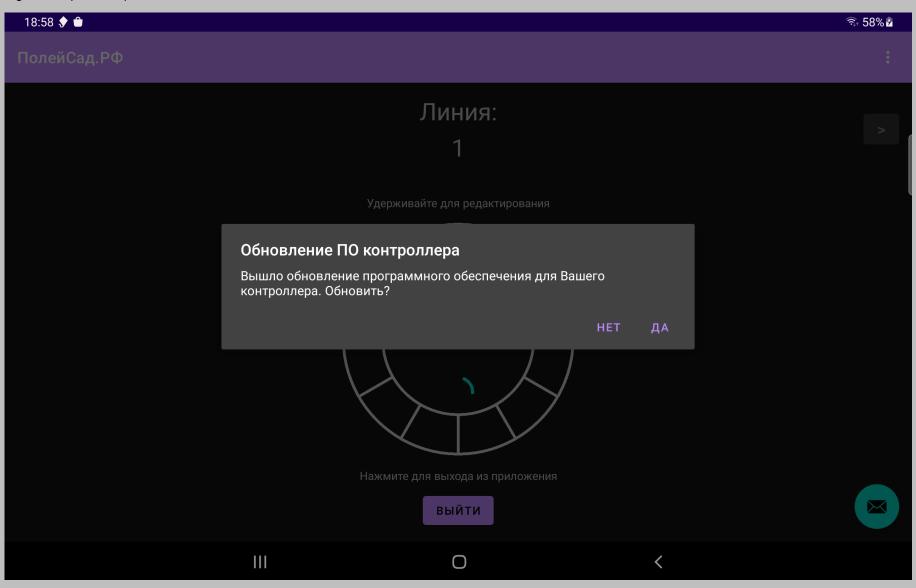


Figure 2. Update progress

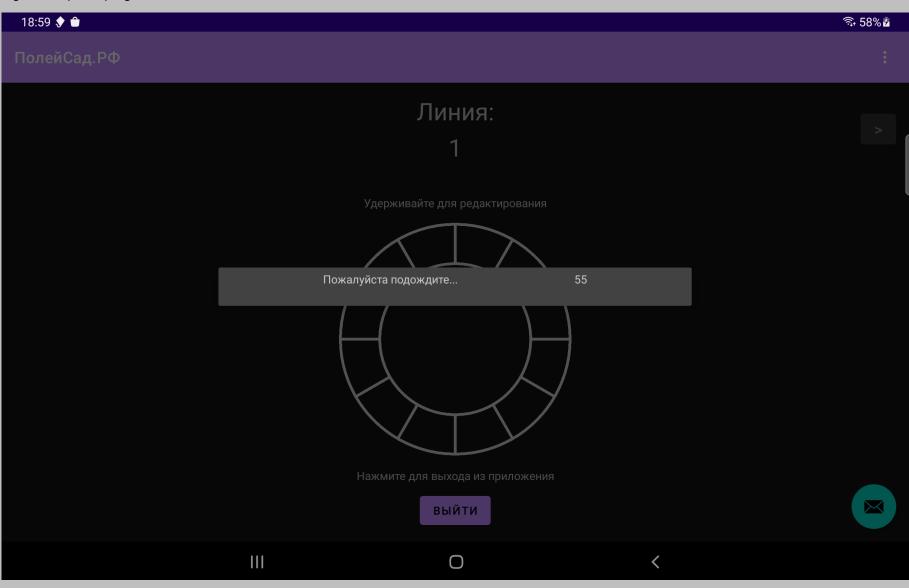


Figure 3. Update completed successfully

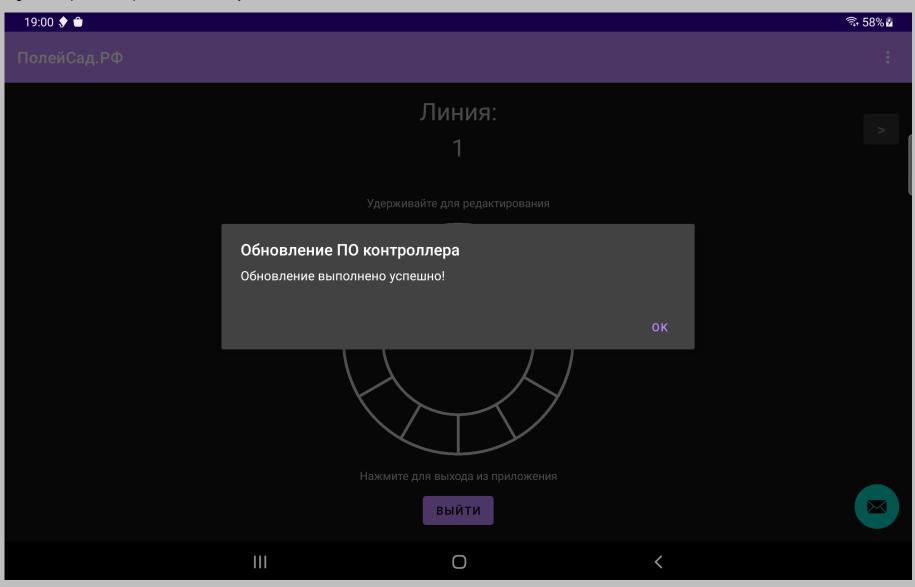
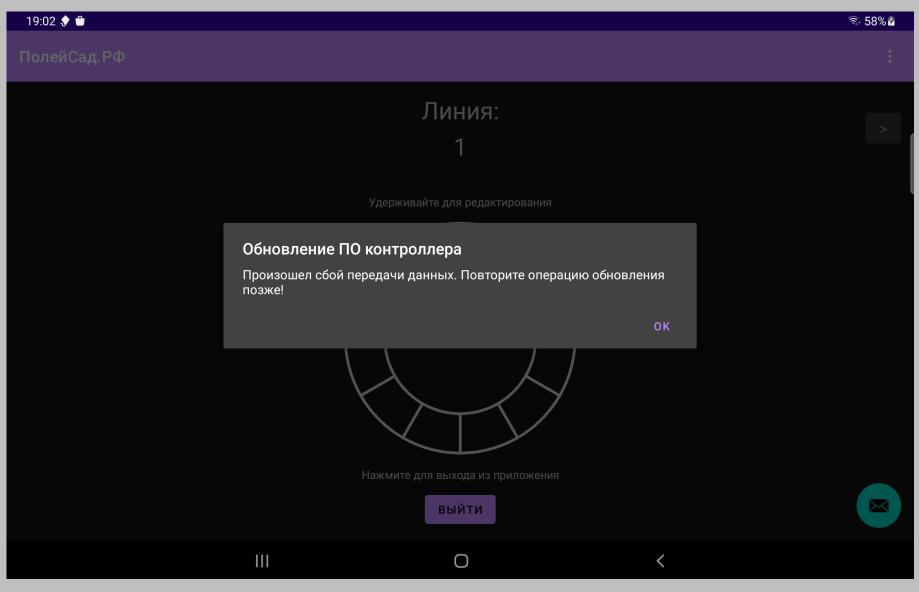


Figure 4. A communication error has occurred



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#### Figure 5. The text representation of the data for updating

```
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 40 \\ \texttt{FFF7} \\ \texttt{FCBF08B5FFF7} \\ \texttt{F0FFBDE} \\ \texttt{80840FFF7ECBF08B5FFF7} \\ \texttt{F0FFBDE} \\ \texttt{80840FFF7F2BF034B044A1878FF2814BF18461046704700FD0108FA510108044B054A13F80E0FF280CBF10461846704700BF00FD0108F45101083} \\ \texttt{40FFF7ECBF08B5FFF7F0FFBDE} \\ \texttt{80840FFF7ECBF08B5FFF7F0FFBDE} \\ \texttt{80840FFF7ECBF08B5FF7F0FFBDE} \\ \texttt{80840FFF7ECBF08B5FF7F0FFBDE} \\ \texttt{80840FFF7ECBF08B5FF7F0FFBDE} \\ \texttt{80840FFF7ECBF08B5FF7F0FFBDE} \\ \texttt{80840FFF7ECBF08B5FF7F0FBDE} \\ \texttt{80840FF7ECBF08B5FF7F0FBDE} \\ \texttt{80840FF7ECBF08B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5FF7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F7F0B5F
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Thanks for attention!