**Module name**: EDI WSN/IoT TestBed

- **Main functionalities**:

Access EDI Wireless Sensor Network/Internet of Things (WSN/IoT) TestBed functionality – remotely reprogram multiple sensor nodes, control serial communication with sensor nodes, start and stop experiments and retrieve historical experiment data. This 100+ node TestBed is in EDI, Riga, Latvia and is distributed across 7 floor building but can be access from anywhere form the world. TestBed includes some outdoor nodes and some mobile nodes capable of providing full testbed functionality anywhere with internet connection. Below the EDI TestBed infrastructure is shown.
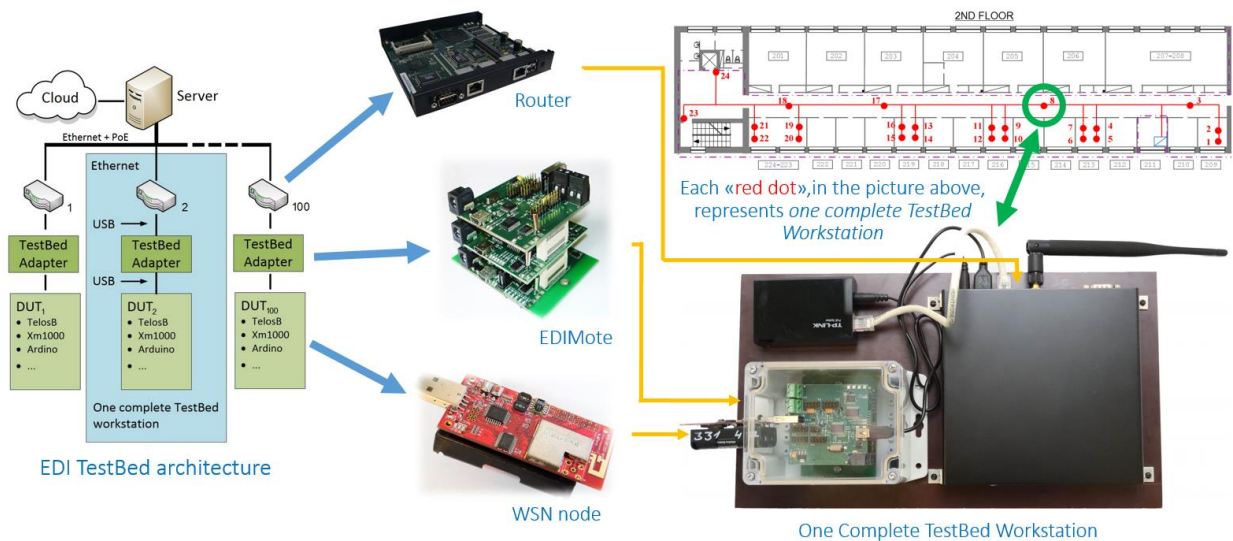

- **Technical specifications:**

A PC capable of running Python3 application with internet connection is required.

- **Inputs and outputs:**

The system accepts precompiled binary files for sensor node reprogramming. Serial communication is bi-directional and can support string or binary information as necessary. System accepts commands related to experiment control as well as provides historical experiment data.
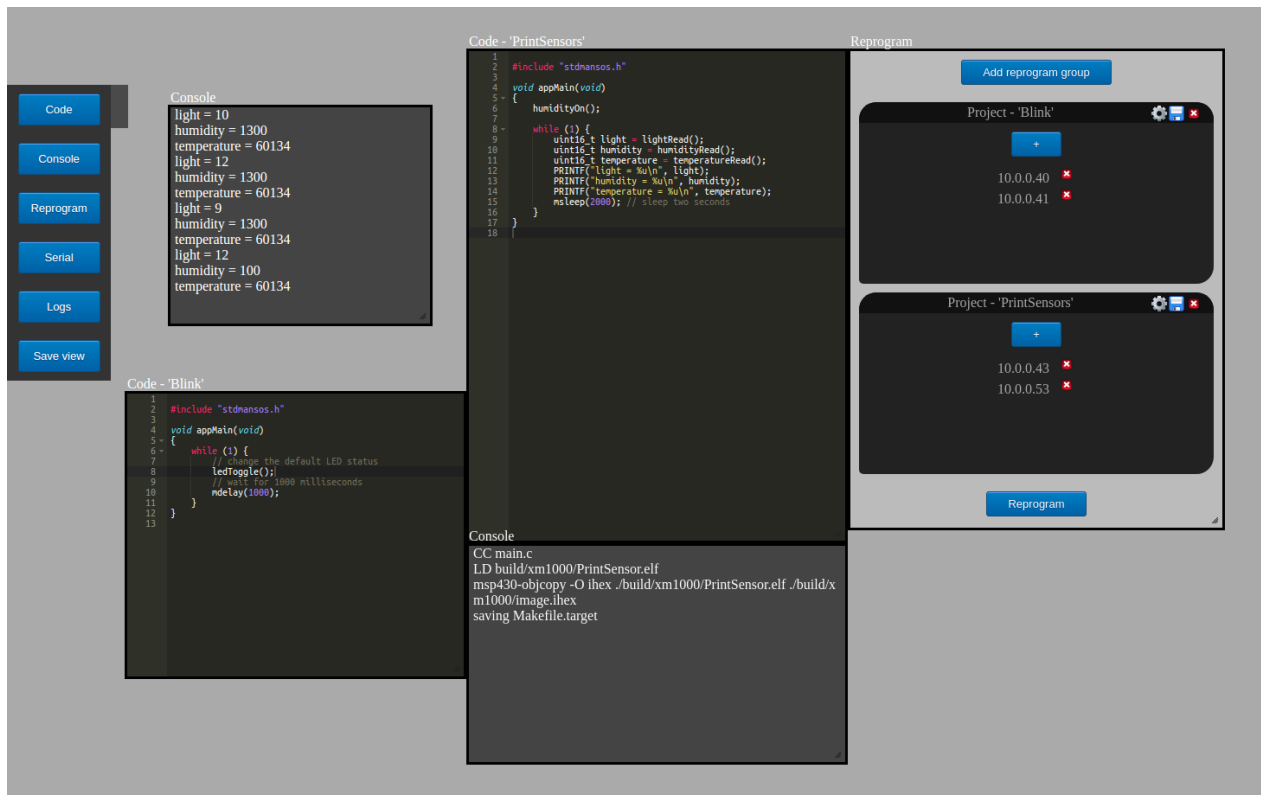
Old system web-based UI can be seen above, the new version will be CLI based for better integration into existing workflows with modularity in mind, so that standalone GUI can be implemented if necessary.

- **Formats and standards used**:

Google Protocol Buffers and gRPC for low level communication with EDI TestBed infrastructure.

- **Availability:**

The module will be available in the second part of 2019. To gain access you need to contact the EDI TestBed team via email testbed@edi.lv

- **Application scenarios:**

Testing network discovery algorithm for WSN/IoT using the hardware and software infrastructure provided by EDI TestBed.

1. *Connect to EDI TestBed;*
2. *Upload precompiled binary with algorithm to be tested for stock XM1000 sensor nodes;*
3. *Reprogram all(28) the senor nodes located at the 3rd floor of our building;*
4. *Start the experiment;*
5. *Monitor network discovery protocol in action via serial data received from sensor nodes;*
6. *Stop the experiment;*
7. *Download experiment data for further examination;*