Enabling data-intensive IoT applications thanks to FD-SOI and eMRAM
Lab spin-off
Incorporated 2014
17 people
IP Fabless
Non volatile Semiconductor IP
eMRAM eRRAM
**eMRAM related IP will cover most of the MCU**

### w/o eMRAM-based IPs

<table>
<thead>
<tr>
<th>Component</th>
<th>w/o eMRAM-based IPs</th>
<th>Full eMRAM-based Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>eSRAM</td>
<td>CPU</td>
</tr>
<tr>
<td></td>
<td>eSRAM</td>
<td>eMRAM (eSRAM-like)</td>
</tr>
<tr>
<td></td>
<td>Power Management</td>
<td>Power Management</td>
</tr>
<tr>
<td>eFlash</td>
<td>CLK</td>
<td>eMRAM (eFLASH-like)</td>
</tr>
<tr>
<td></td>
<td>BIAS</td>
<td>BIAS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RF</td>
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</tbody>
</table>

### Full eMRAM-based Solution

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<tr>
<th>Component</th>
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<tbody>
<tr>
<td>CPU</td>
<td>Accelerator</td>
</tr>
<tr>
<td></td>
<td>UART</td>
</tr>
<tr>
<td>eMRAM (eSRAM-like)</td>
<td>GPIO</td>
</tr>
<tr>
<td></td>
<td>ADC</td>
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<tr>
<td></td>
<td>Timers</td>
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<td>CLK</td>
<td>BIAS</td>
</tr>
<tr>
<td></td>
<td>RF</td>
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</tbody>
</table>
High added value IP offerings roadmap

<table>
<thead>
<tr>
<th>Year</th>
<th>Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td>- Energy</td>
</tr>
</tbody>
</table>
| 2019 | - Energy  
  + Speed |
| 2020 | - Energy  
  + Speed  
  + Performance |

**eMRAM-based memory subsystem**
- Low power data logging
- Instant-on/off by software
- Smart scratchpad

**eMRAM in logic (NV system)**
- Instant-on/off by hardware
- Data profiling
- Super fast wake up
- Reduced transactions
- Dedicated cells: RNG, timers...

**eMRAM-based AI processing**
- Weight storage memory
- Stochastic computing units
- Neural networks

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**22FDX MCU reference design project ongoing (TO in July)**

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Enable intelligence of things thanks to eMRAM

Energy savings at system level (eMRAM-based solutions)

- Active
- Deep Sleep

2018: x7
2019: x16
2020: x23
FD-SOI + eMRAM is a killer combo!

Energy savings at system level (eMRAM-based solutions + BB)

2018: x25
2019: x33
2020: x45
Ultra-low power solutions with eVaderis

Connected Object Powered by eVaderis

- 10X extended lifetime
- 10X energy saving
- More processing
- ↓ TCO, ↑ QoS

Enable On Thing

Long lifetime wearable medical analysis

Long lifetime smart vision (automotive, smarts cities...)

Artificial intelligence

Sensor/data fusion, micro storage (industry 4.0...)

4/19/2018
To address a wide range of applications

2018

- CPU
- eMRAM (eFLASH-like)
- Accelerator
- UART
- GPIO
- ADC
- Timers
- BIAS
- RF

2019

- CPU
- NVSRAM
- eMRAM (eSRAM-like)
- Accelerator
- UART
- GPIO
- ADC
- Timers
- BIAS
- RF

2020

- CPU
- NVSRAM
- eMRAM (eSRAM-like)
- Accelerator
- UART
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eMRAM-based memory subsystem

eMRAM in logic (NV system)

eMRAM-based AI processing