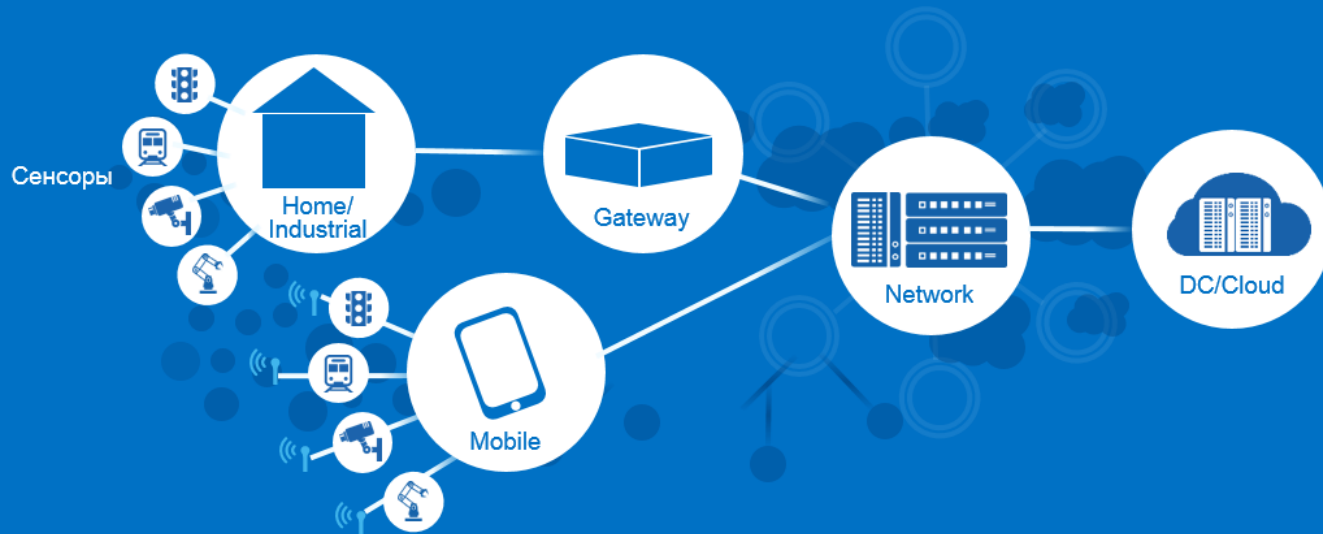




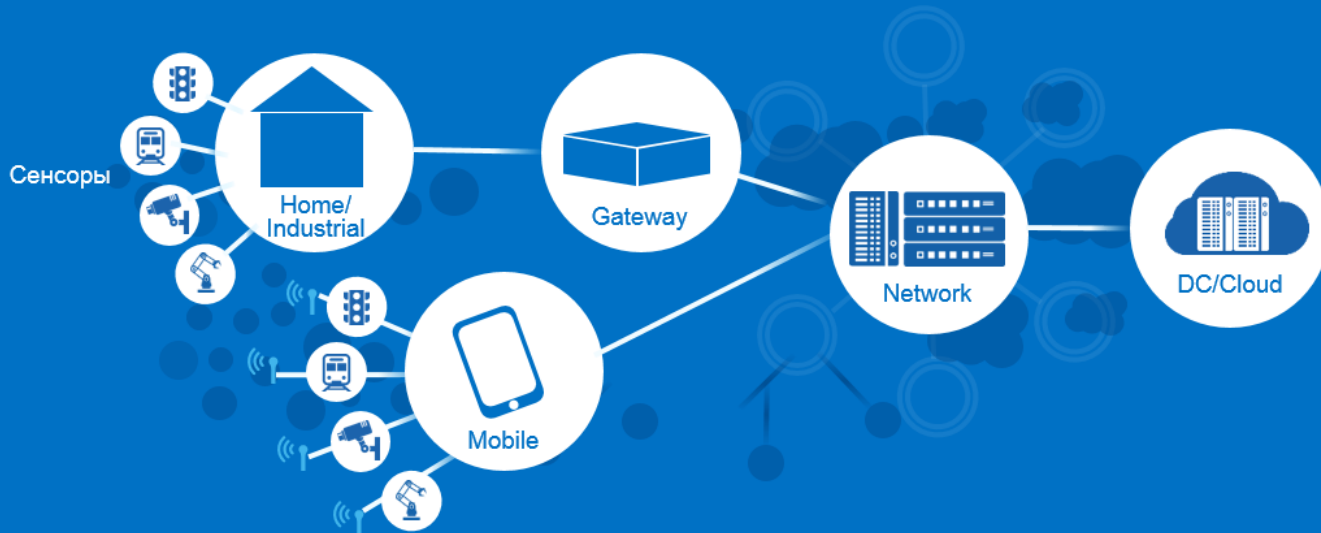
# Познай Intel® Edison

Ноябрь 2015

# Интернет Вещей. Технические предпосылки.



# Интернет Вещей. Технические предпосылки.



Стоимость сенсоров  
За 10 лет **2X** ↓

Стоимость сетевого трафика  
За 10 лет **40X** ↓

Стоимость вычислений  
За 10 лет **60X** ↓

\*\*\*

# Интернет Вещей. Практические задачи.

- Индустриальная телеметрия
  - для оптимизации технологических процессов
  - для контроля транспорта
  - для ресурсосбережения
- Телеметрия в здравоохранении
  - для контроля самочувствия и занятий спортом
  - наблюдение за пациентами
- Системы безопасности
- Системы домашнего комфорта
- Городские сервисы и умные здания

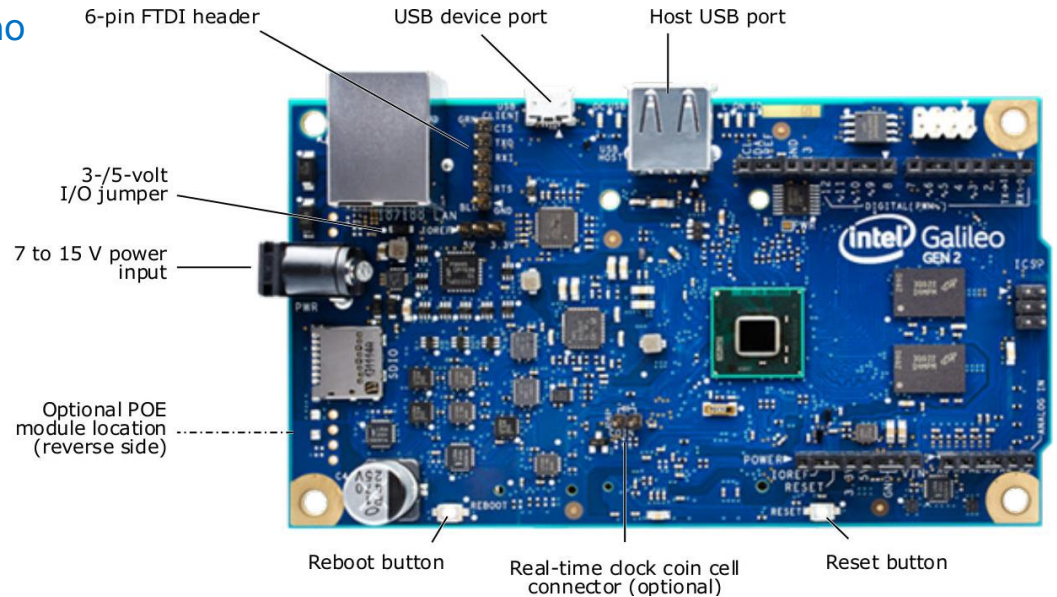




# Intel® Galileo Gen2.

## Board I/O:

- Механически совместима с Arduino Uno
- 20 цифровых выводов (6 ШИМ)
- 6 аналоговых входов
- 2 UART (RX/TX)
- 1 I2C
- 1 ICSP 6-pin header (SPI)
- USB (Host)
- Micro USB (Client)
- SD Card
- Питание (7V – 15V)

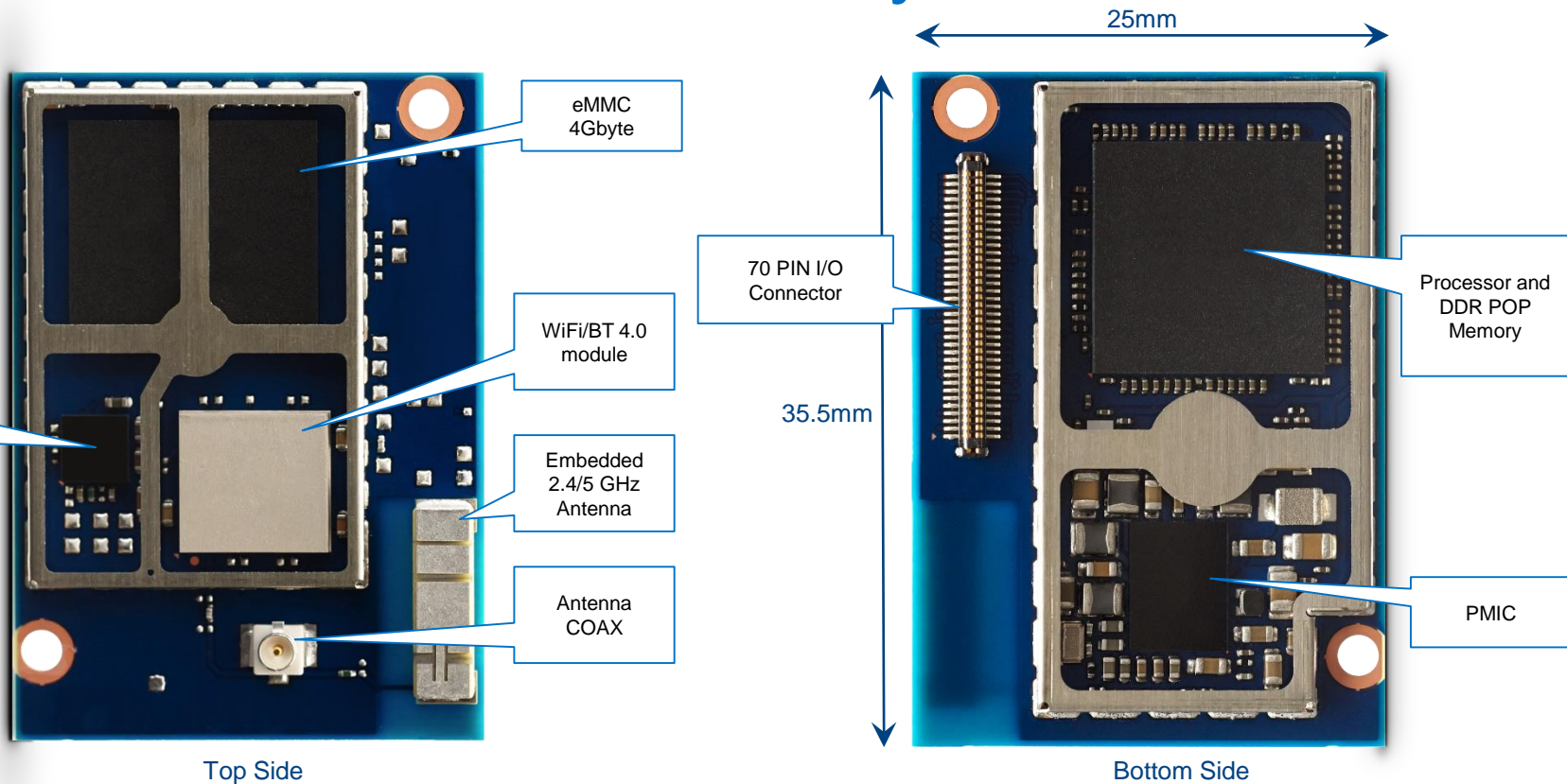


# intel Edison





# Intel® Edison Mechanical Layout



### Physical

Form Factor	Board with 70-pin connector
Dimensions	35.5 x 25.0 x 3.9 mm max
C/M/F	Blue PCB with Shields / No enclosure
Connector	Hirose DF40 Series (1.5mm, 2.0mm, or 3.0mm stack height)
Operating Temperature	0 – 40 degC

### External Interfaces

Total of 40 GPIOs which can be configured as:

SD Card	1 Interface
UART	2 Controllers (1 full flow control, 1 RX/TX)
I2C	2 Controllers
SPI	1 Controller with 2 chip selects
I2S	1 Controller
GPIO	Additional 12 (with 4 capable of PWM)
USB 2.0	1 OTG Controller
Clock Output	32 KHz, 19.2 MHz

### Major Edison Components

SoC	22-nm Intel® SoC that includes a dual-core, dual-threaded Intel® Atom™ CPU at 500 MHz and a 32-bit Intel® Quark™ microcontroller at 100 MHz
RAM	1 GB LPDDR3 POP memory (2 channel 32bits @ 800MT/sec)
Flash Storage	4 GB eMMC (v4.51 spec)
WiFi	Broadcom* 43340 802.11 a/b/g/n; Dual-band (2.4 and 5 GHz) On board antenna or external antenna SKU configurations
Bluetooth	BT 4.0 + 2.1 EDR

### Power

Input	3.3V – 4.5V
Output	100mA @3.3V and 100mA @ 1.8V
Power	Standby (No radios): 13mW Standby (BT 4.0): 21.5mW (BTLE in Q4'14) Standby (WiFi): 35 mW

### Firmware + Software

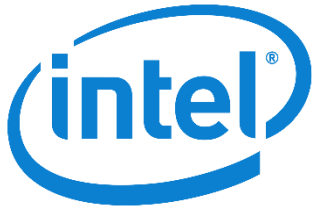
CPU OS	Yocto Linux* v1.6
Development Environments	Arduino* IDE Eclipse supporting: C, C++, & Python Intel XDK supporting: Node.JS & HTML5
MCU OS	RTOS
Development Environments	MCU SDK and IDE

# Intel® Edison Family



**Intel  
Expansion Boards**

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**Partner  
Expansion Boards**

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**Built to Order  
Expansion Boards**

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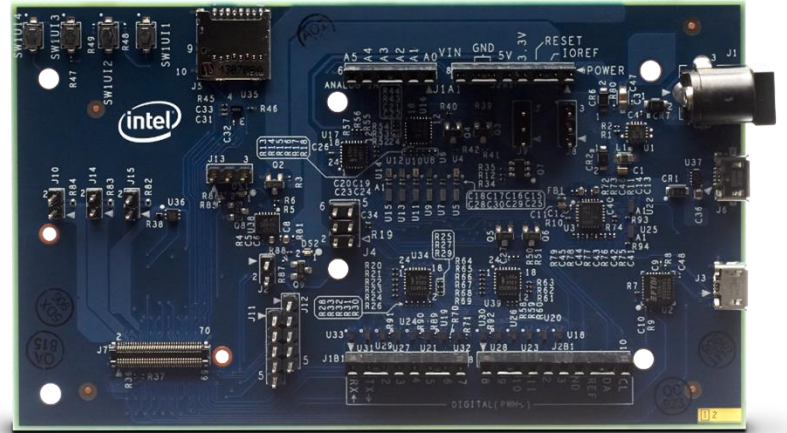


# Intel® Edison Board for Arduino\*

**Market position:** Similar to Arduino Yun (Arduino Sketch, Linux, WiFi & BT)

**Board I/O:** Compatible with Arduino\* Uno (except only 4 PWM instead of 6 PWM)

- 20 digital input/output pins including 4 pins as PWM outputs
- 6 analog inputs
- 1 UART (RX/TX)
- 1 I2C
- 1 ICSP 6-pin header (SPI)
- Micro USB device connector OR (via mechanical switch) dedicated standard size USB host Type-A connector
- Micro USB device (connected to UART)
- SD Card connector
- DC power jack (7V – 15V DC input)

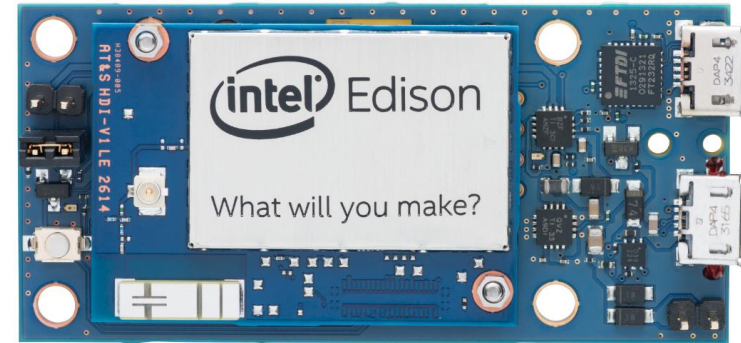
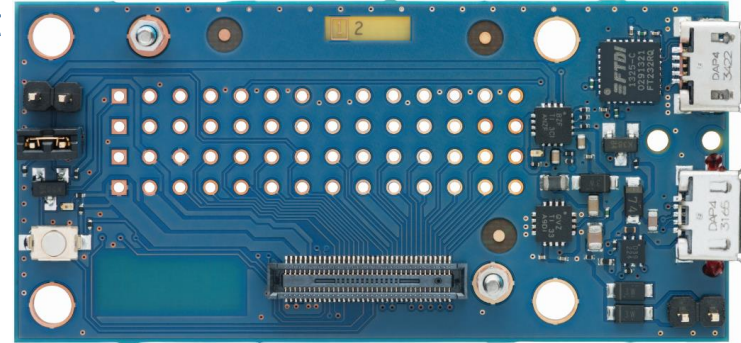


# Intel® Edison Breakout Board

**Market position:** The Edison Breakout board is for non-Arduino users. This breakout board has a minimalistic set of features and is slightly larger than the Edison module.

## Board I/O:

- Exposes native 1.8V I/O of the Edison module
- .1" grid I/O array of through-hole solder points
- USB OTG with USB Micro Type-AB connector
- USB OTG power switch
- Battery Charger
- USB to device UART bridge with USB Micro Type-B connector
- DC power supply jack (7V – 15V DC input)



# Intel® Edison Software

## Firmware

Intel IFWI (Integrated FirmWare Image) in binary

## OS Loader

U-Boot version (2nd stage bootloader in source)

## Kernel/BSP

Yocto Linux 1.6

Linux kernel v3.10.17

## Tools

Native SDK

- Standard compiler support (GCC 4.8.2), GLIB 2.38.2
- Standard debugger support GDB 7.6.2

Custom Tools: Flash tools (DFU-Util ; XFSTK for stitching & flashing)

## Additional Developer Tools & Environments

Arduino IDE for Mac, Windows and Linux OS

- Cross compilers for each of the host
- Core Arduino Libraries

Node.js (Supported by Intel® XDK)

Python (This package is part of BSP)

## WLAN/BT Connectivity (BCM43340)

Firmware in Binary: WiFi STA and BT+LE

Drivers in source: BCM kernel drivers, WiFi Supplicant and BlueZ

## Middleware

Connectivity framework for simplified D2D and D2C

- Networking, Messaging, privacy/security
- Connectivity Framework Enhancements
- Bluetooth Support
- Expanded I/O Library Support
- JavaScript & Python Bindings, Additional Sensors

## Cloud

Web Portal, Identity Management, User Profile

Device Registration; Device Data Upload/Visualization

Portal Enhancements & Back-end Integration

RESTful Device Data Access

Device Messaging & Notification with Third-Party Service Integration

OTA Software Installation & Update

Logging Features

Hosted IDE for Cloud-based Services

Online Forums

Other names and brands may be claimed by the property of others by all third party name and the notation.

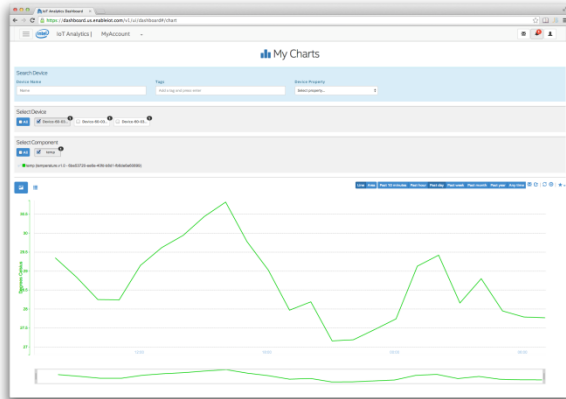


# Edison Developer Options

	Arduino* Developer	Java script Developer	Embedded Developer	Visual Programming	MCU Developer
Cloud	Intel® IoT Analytics Platform				
IDE	Arduino* IDE Win*/ Mac*	Intel XDK Win*/ Mac*/ Linux*	Eclipse Win*/ Mac*/ Linux*	Wylidrin* Web	Win*/ Mac*/ Linux*
Programming Language	Arduino* Sketch C++	Javascript (Node JS)	C/ C++/Python	Visual Javascript	C/C++
Tools/ Libraries	Arduino* Libraries	Intel XDK	ISS	Wylidrin*	MCU SDK
OS / Boot Image	Yocto Linux* 1.6				RTOS

# Intel® IoT Analytics Platform

- Provides seamless Device to Device and Device to Cloud communication
- Ability to run rules on your data stream that trigger alerts based on advanced analytics
- Foundational tools for collecting, storing, and processing data in the cloud
- Free for limited and non-commercial use

The screenshot shows the 'My Devices' dashboard. It features a search bar at the top, followed by a table of device information. The table has columns for Id, Gateway, Name, Tags, and Status. Below the table is an 'Add a New Device' button.

Id	Gateway	Name	Tags	Status
24-a5-80-21-5b-29	24-a5-80-21-5b-29	Bridge sensor	US   California   San Francisco   Bridge	created
60-03-08-96-05-d0	60-03-08-96-05-d0	North temperature	US   California   San Francisco   North	active
60-03-08-96-05-d9	60-03-08-96-05-d9	South Temperature	US   California   San Francisco   South	active





**INTEL. РАСКРЫВАЕМ  
ТАЛАНТЫ В КАЖДОМ**



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IDF14 San Francisco  
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### FEATURED CONTENT

[Troubleshooting Topics](#)  
1 week ago

by intel\_jesus

[More Shields Tested](#)  
2 weeks ago

by intel\_jorge

### SEARCH SUPPORT ARTICLES

# Обучающие видео



GetYourIntelEdisonOnline.mp4



Intel Edison - Set Up Your Computer - Windows Integr...



Intel\_Edison\_Connecting\_Cables\_wlntro.mp4



IntelEdison\_Unboxing\_and\_Assembly.mp4



IntelGalileo\_WiFi\_Card\_Assembly.mp4



SetUp\_IntelXDKIoTEdition\_Part2\_RunSampleProject.mp4



SetUpEthernetoverUSB\_forIntelEdison\_Mac.mp4



SetUpEthernetoverUSB\_forIntelEdison\_Win.mp4



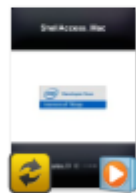
SetUpIntel\_XDKIoTEdition\_Part1\_Installation.mp4



SetUpIoTDevKit\_Eclipse\_Part1\_Installation.mp4



SetUpIoTDevKit\_Eclipse\_Part2\_RunASampleProject.mp4



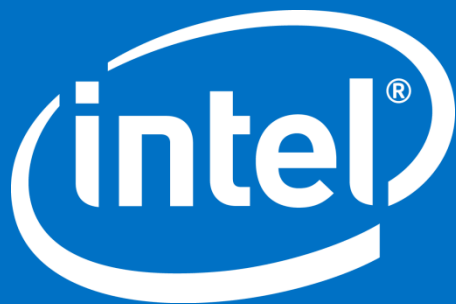
ShellAccess\_Mac.mp4



ShellAccess\_Windows.mp4



UpdateFirmwareManually\_Edison.mp4



# Intel® Curie™

- Малопотребляющий Intel® Quark™ SE SoC
- Интегрированный сенсор-хаб с функцией поиска паттернов
- 384kB Flash, 80kB SRAM
- Bluetooth\* Low Energy
- 6-осный комбинированный сенсор с акселерометром и гироскопом

