

How to Build a Smart Garage Door Opener for Under \$100

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Agenda

- My Garage Issues
- Raspberry Pi
- Windows 10 IoT Core
- Building the Pi App
- Azure IoT Hub
- Cloud Connected



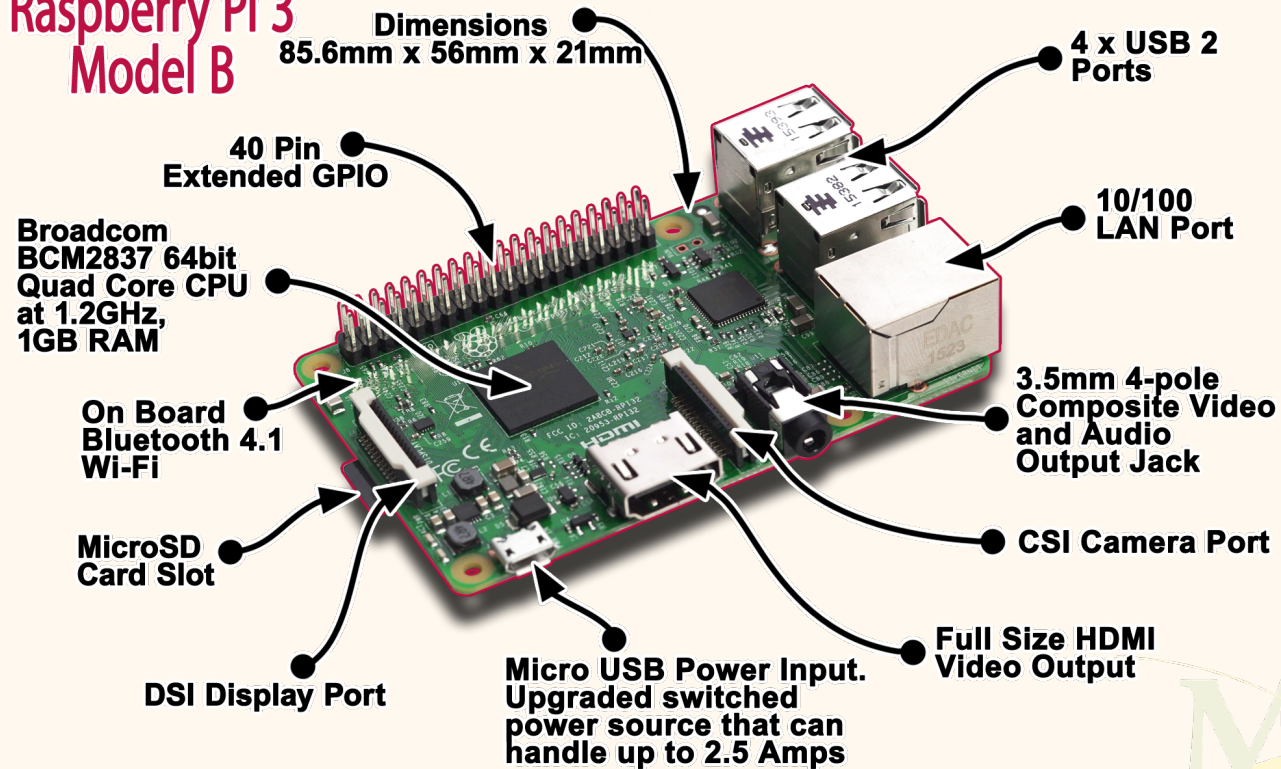
The Problem

- Can't see the door
- Apparently, people steal
- Also, I have kids



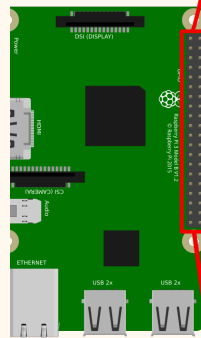
Raspberry Pi

Raspberry Pi 3 Model B



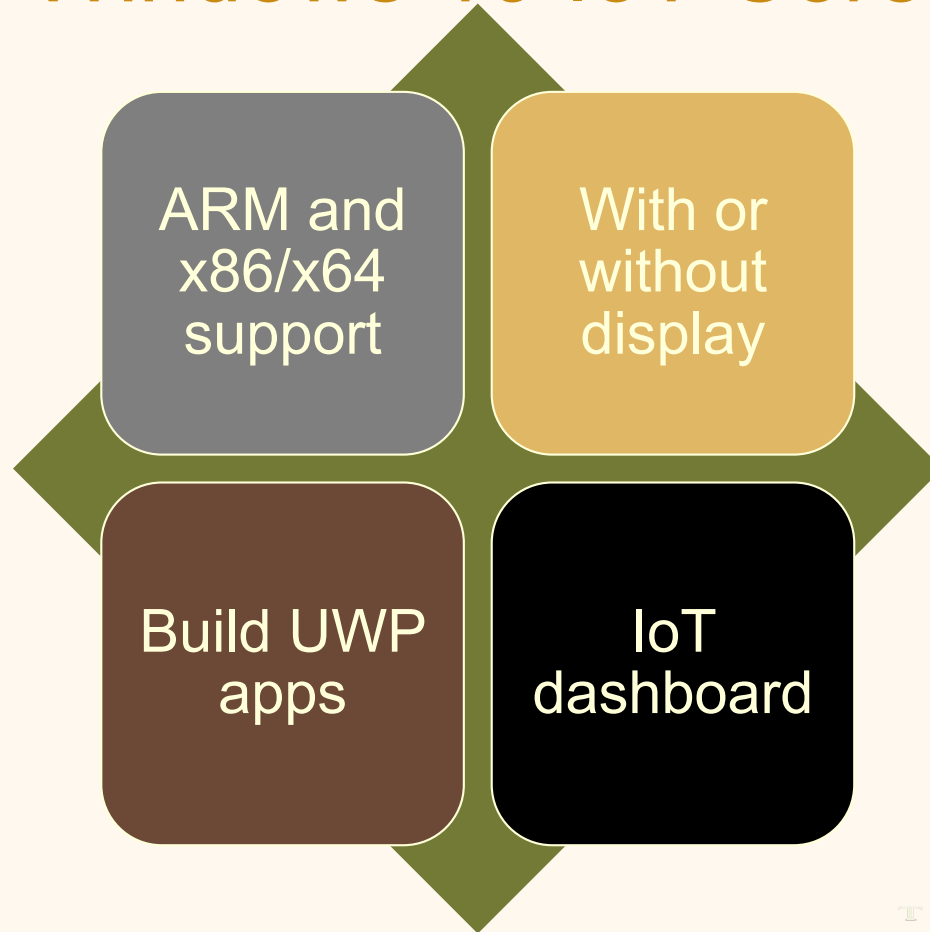
General Purpose Input / Output

- Power
- Ground
- Input
- Output
- Special PINs



3.3V PWR	1	2	5V PWR
GPIO2 (SDA1 , I2C)	3	4	5V PWR
GPIO3 (SCL1 , I2C)	5	6	GND
GPIO4 (GPIO_GCLK)	7	8	(UART_TXD0) GPIO
GND	9	10	(UART_RXD0) GPIO
GPIO17 (GPIO_GEN0)	11	12	(GPIO_GEN1) GPIO
GPIO27 (GPIO_GEN2)	13	14	GND
GPIO22 (GPIO_GEN3)	15	16	(GPIO_GEN4) GPIO
3.3V PWR	17	18	(GPIO_GEN5) GPIO
GPIO10 (SPI0_MOSI)	19	20	GND
GPIO9 (SPI0_MISO)	21	22	(GPIO_GEN6) GPIO
GPIO11 (SPI0- CLK)	23	24	(SPI_CE0_N) GPIO
GND	25	26	(SPI_CE1_N) GPIO
ID_SD (I2C EEPROM)	27	28	ID_SC (I2C EEPRO
GPIO5	29	30	GND
GPIO6	31	32	GPIO12
GPIO13	33	34	GND
GPIO19	35	36	GPIO16
GPIO26	37	38	GPIO20
GND	39	40	GPIO21

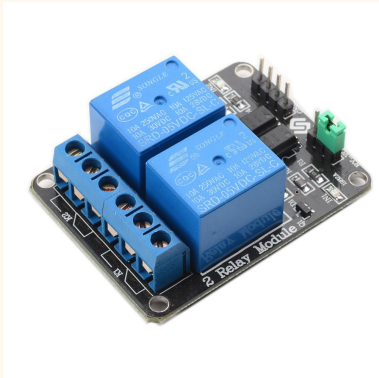
Windows 10 IoT Core



Shopping List



Hardware	Price
Raspberry Pi	\$55
Door Sensor	\$18
Relay	\$7
Wires, Wires, Wires	\$10
Total	\$90



Azure IoT Hub

Provisioning
of devices

Messaging

Monitoring

Multiple
transports

Edge
processing

Azure IoT Hub

Device to Cloud

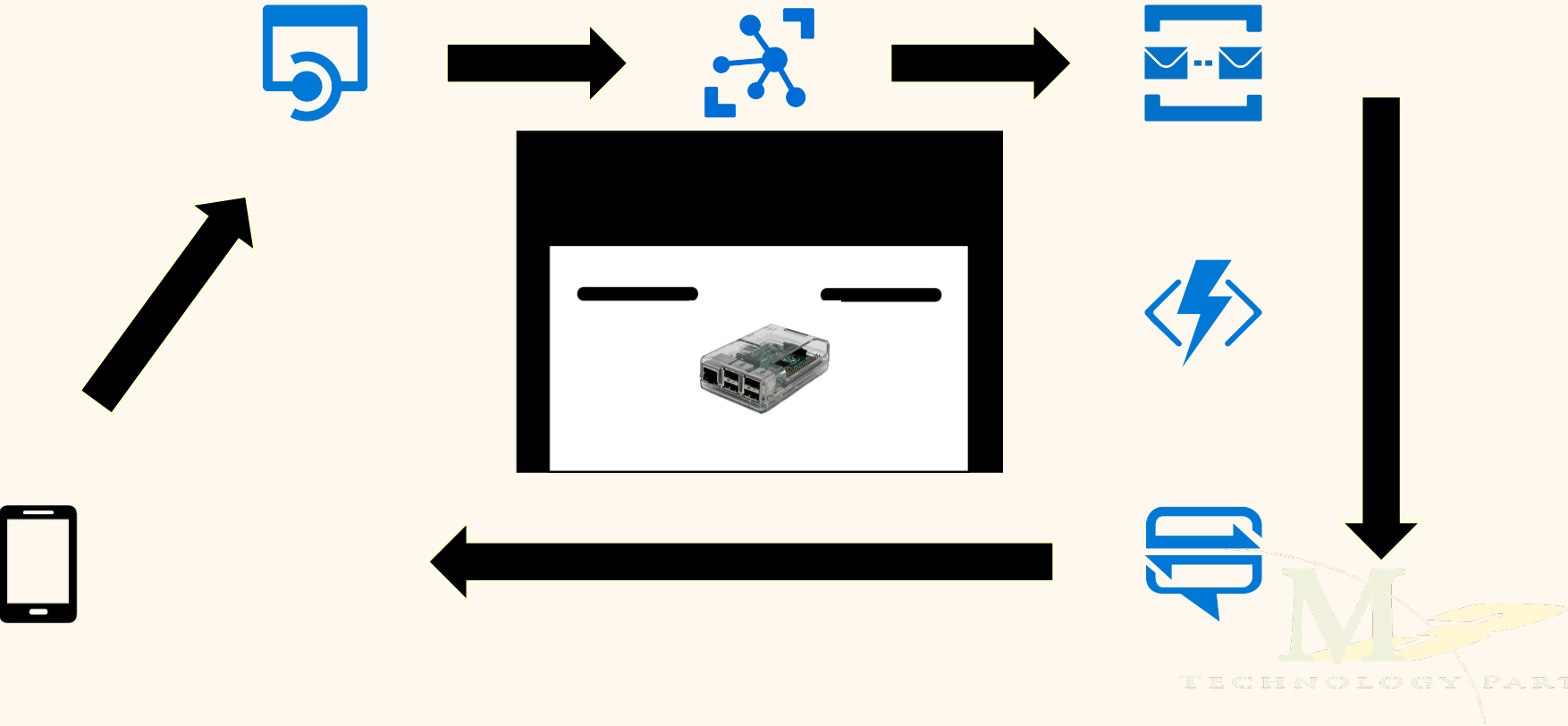
Cloud to Device

Messaging

Direct Methods

Device Twins

The Solution



Future Plans

Device

- Webcam support

Mobile

- Widget / Voice

API

- Manage users / Share

Shopping Links

- Pi Kit (<http://a.co/4MyLtDY>)
- Sensor (<http://a.co/awu8tHO>)
- Relay (<http://a.co/7nd6kto>)
- Wires (<http://a.co/c7I7xBW>)
 - Bell wire for garage door opener
- Fun Kit (<http://a.co/1w95ITZ>)

