



Microsoft's XNA

Pieter Joost van de Sande

sr. IT consultant & speaker @ Sogyo
Microsoft Visual C# MVP
boardmember dotNed
boardmember Devnology



Agenda

- Introduction
- From zero to hero
- Microsoft and gaming
- Live demo
- Wii-mote
- Live demo

How gaming evolved

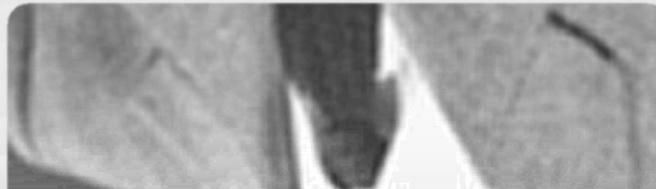
FROM ZERO TO HERO



Who is this?



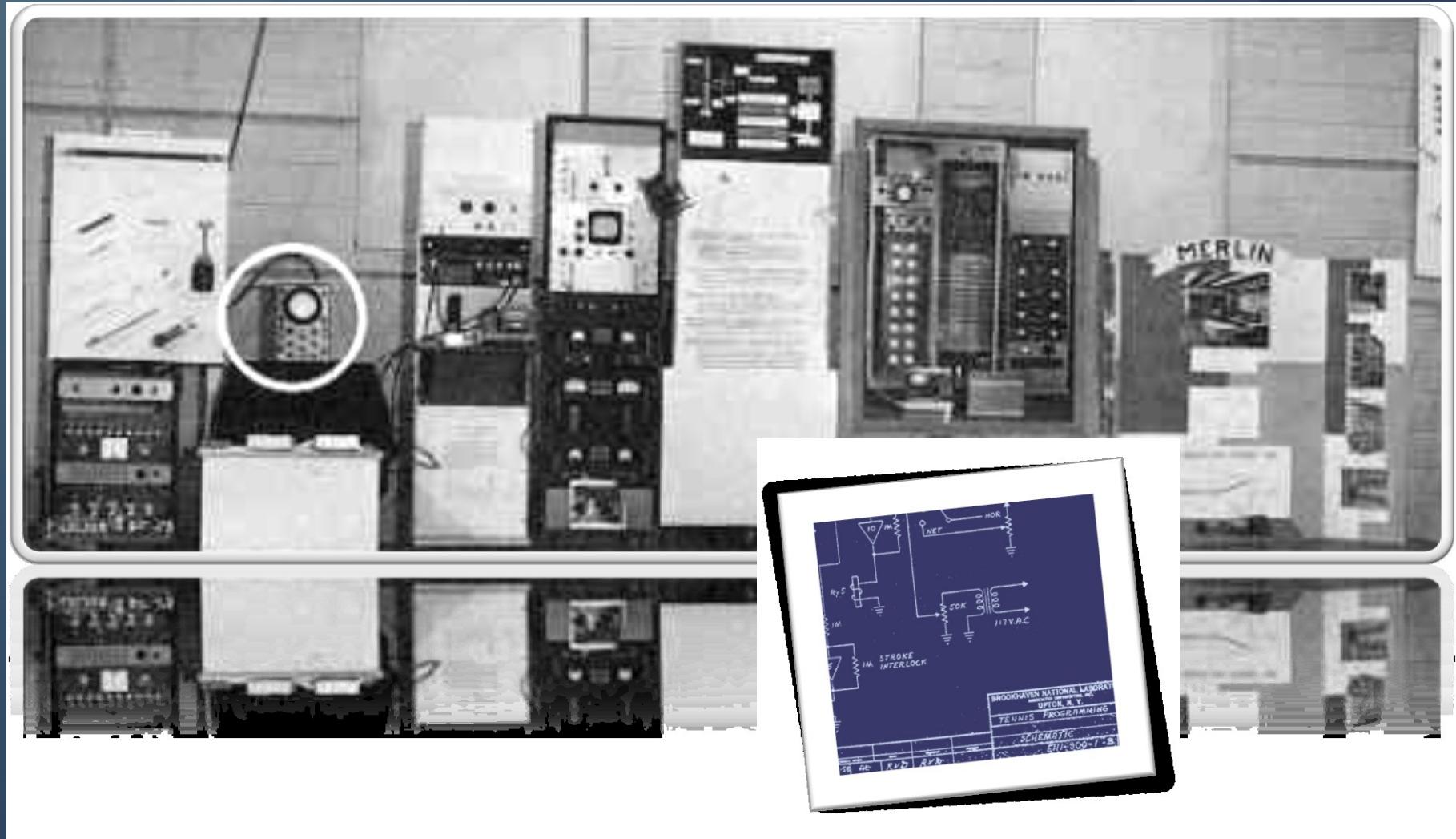
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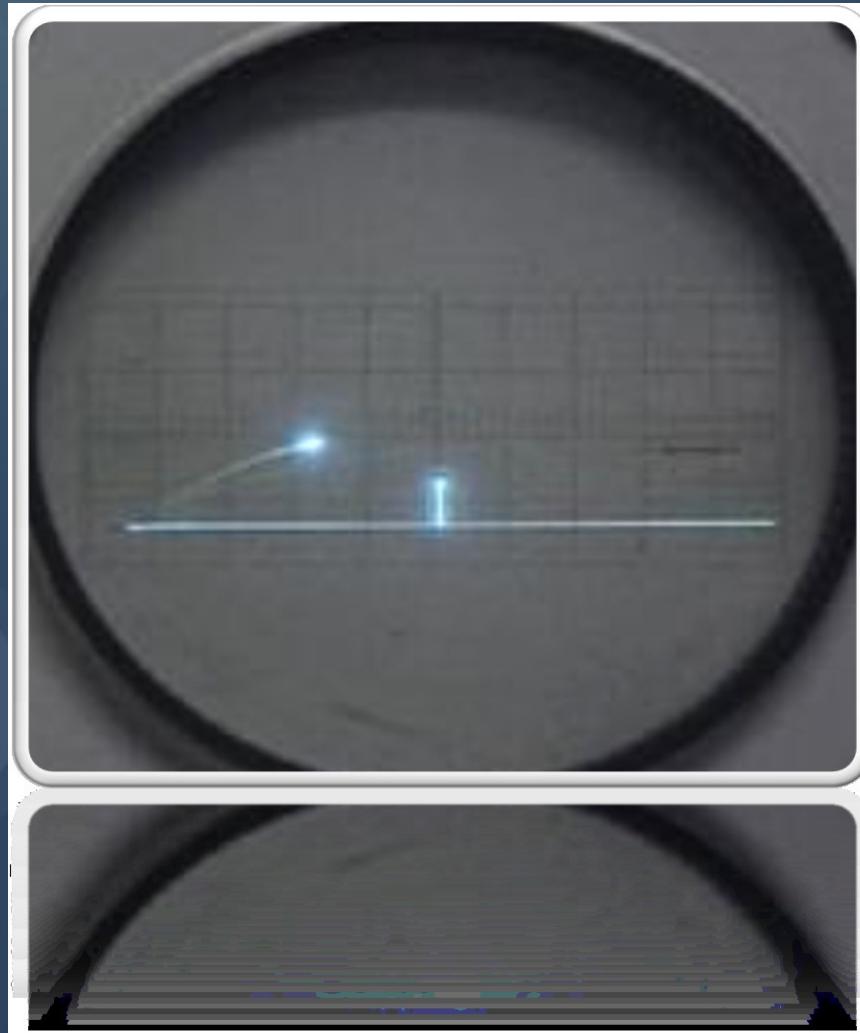
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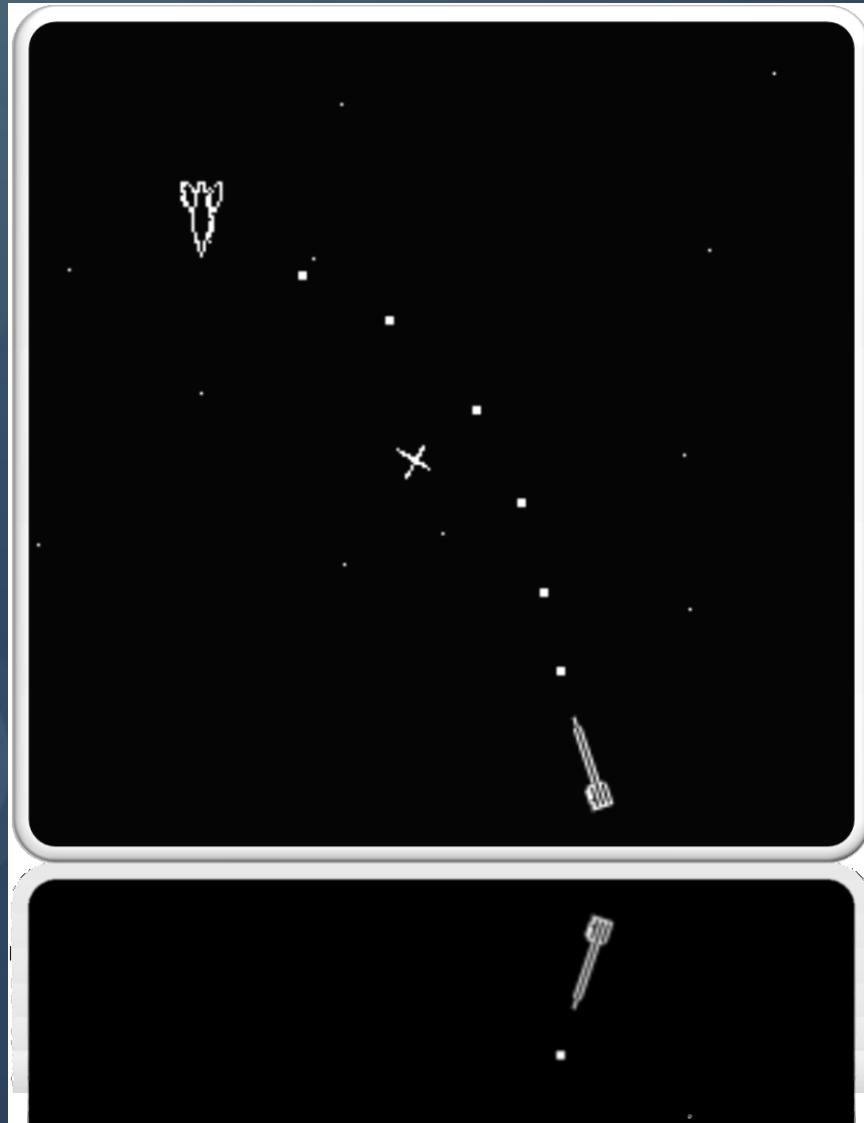
First video game, 1958



First video game, 1958



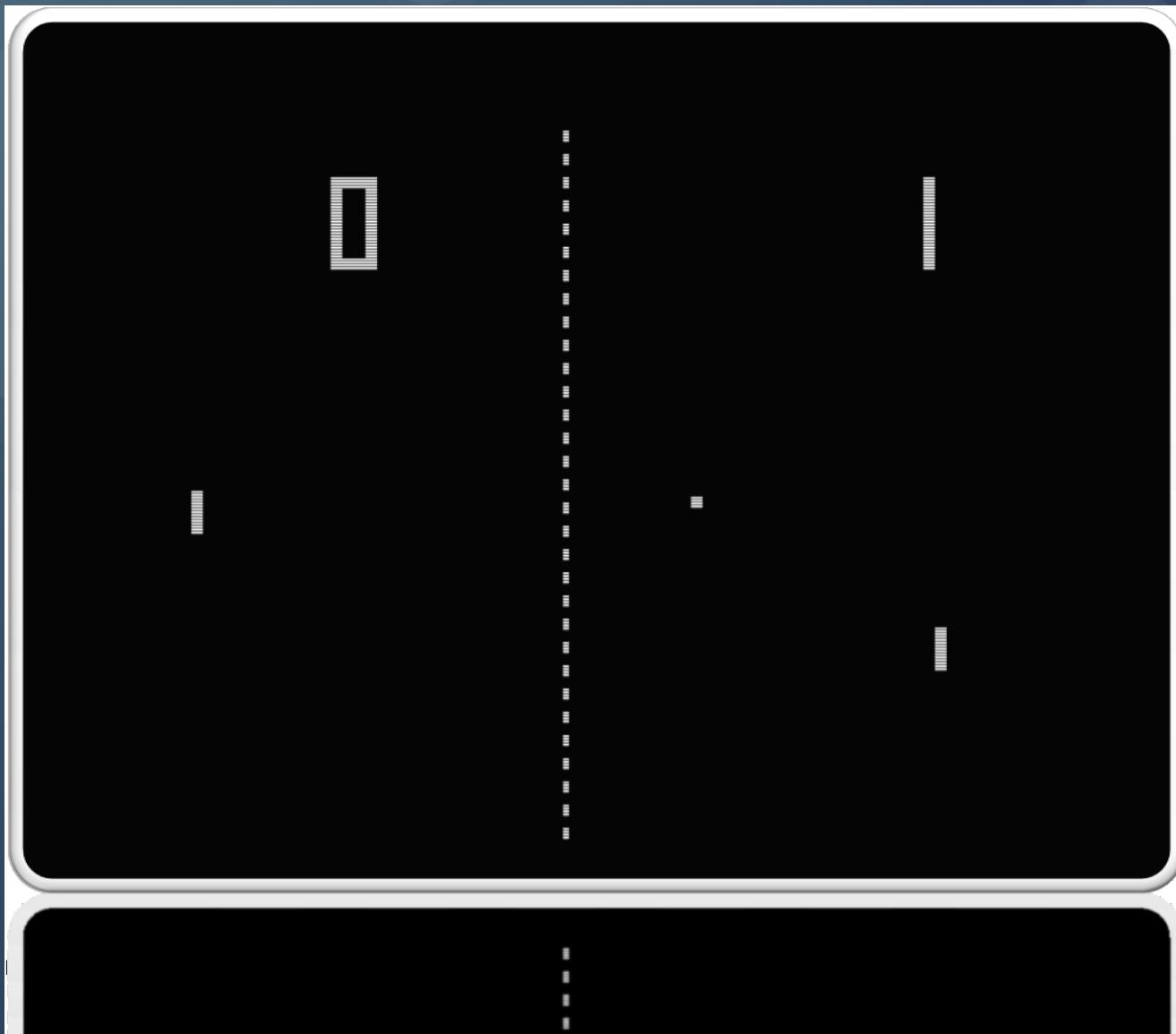
Spacewar!, 1962



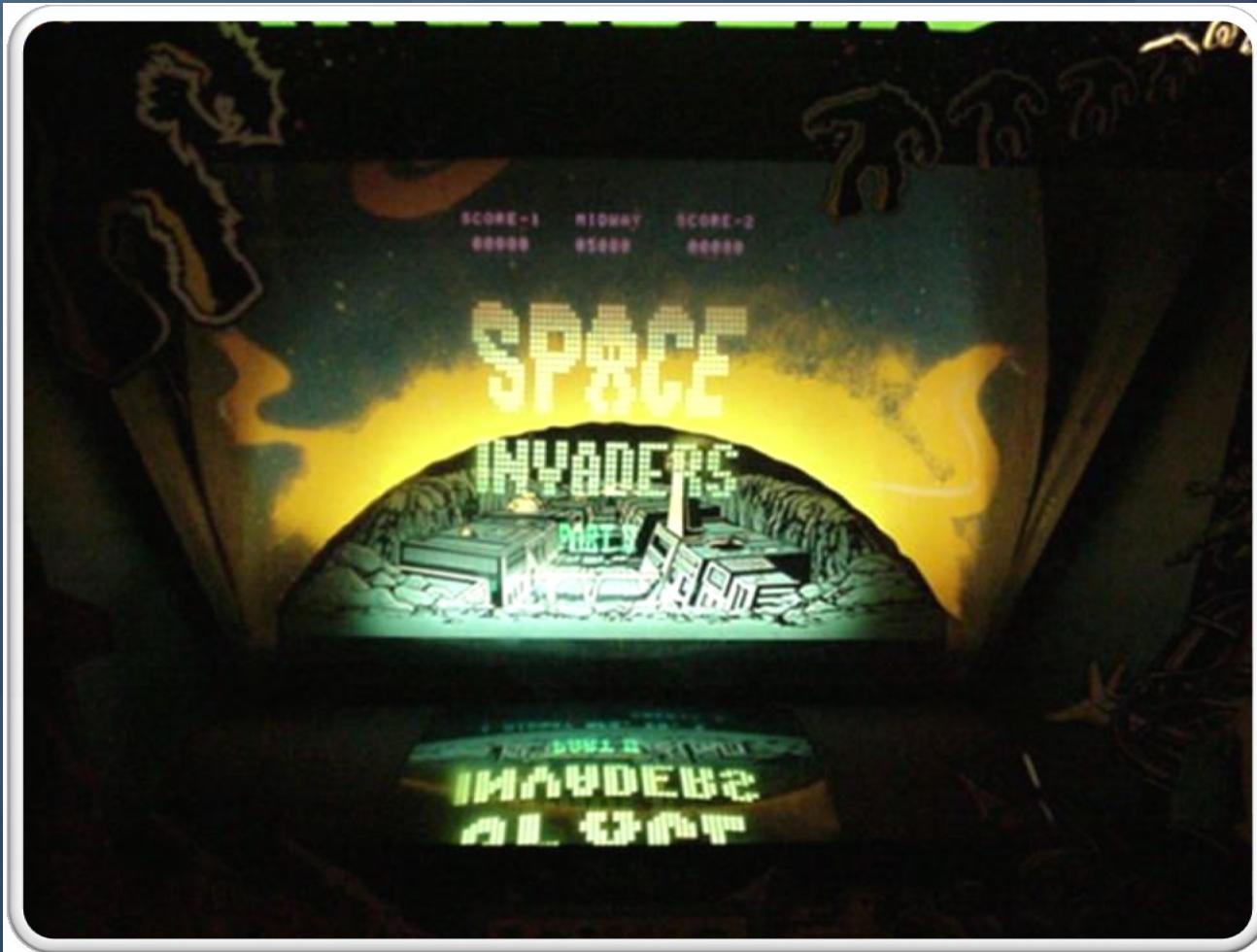
The Galaxy Game, 1971



Pong, 1972



Spaceinvader, 1978



Commodore, 1982



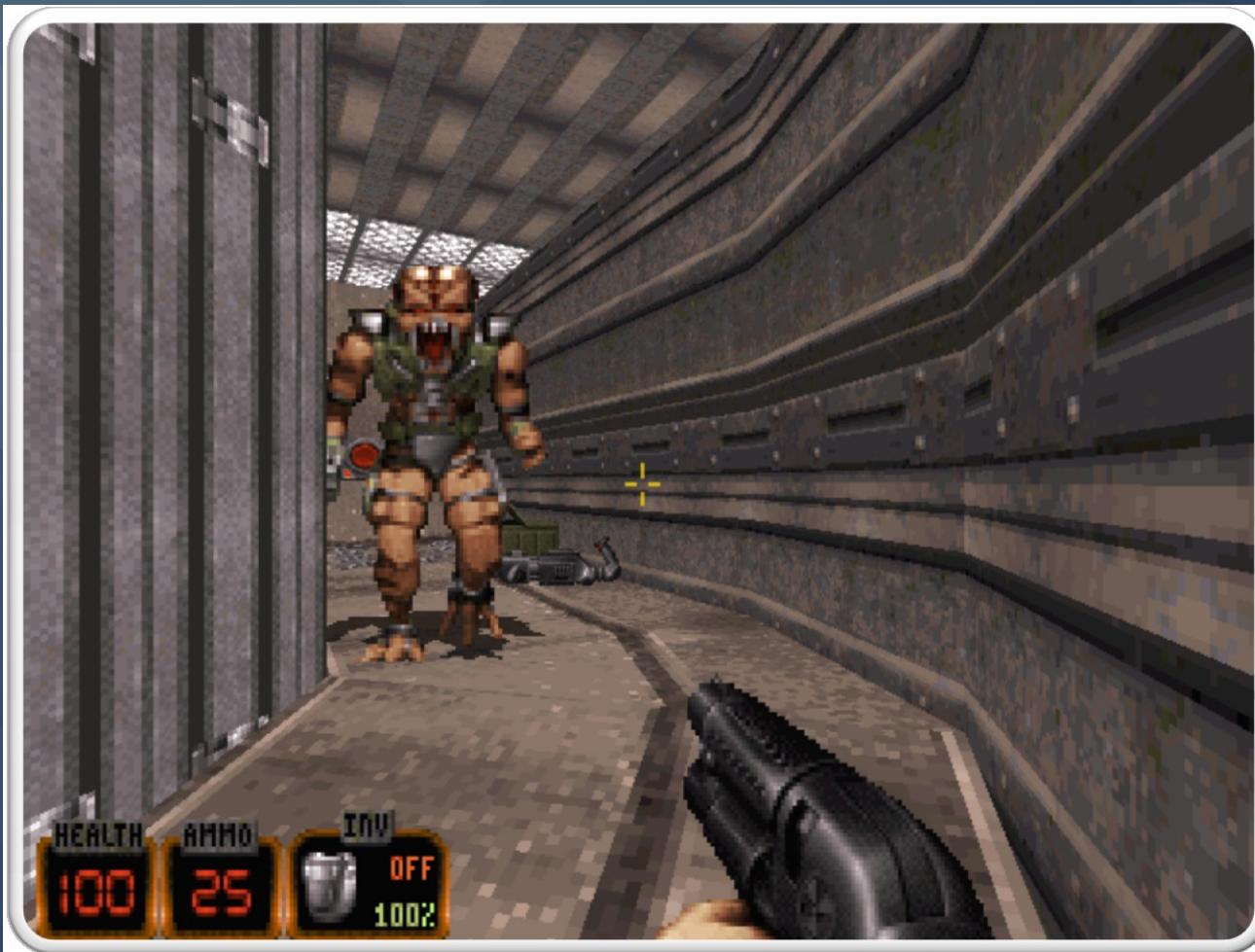
Super Mario Bros, 1985



Wolfenstein 3D, 1992



Duke Nukem 3D, 1996



xna

Call of Duty 4, 2007



xna

GT5 prologue, 2008



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Trends

GAMING TODAY

Facts



World of Warcraft [2007]
\$ 1.176 milliard



USA [2007]
\$ 17.9 miljard



NL Game industrie
\$ 1.47 milliard



NL game industrie
larger then music

NL game industrie
larger then film



Halo 3, first 24 hours
\$ 170 miljoen

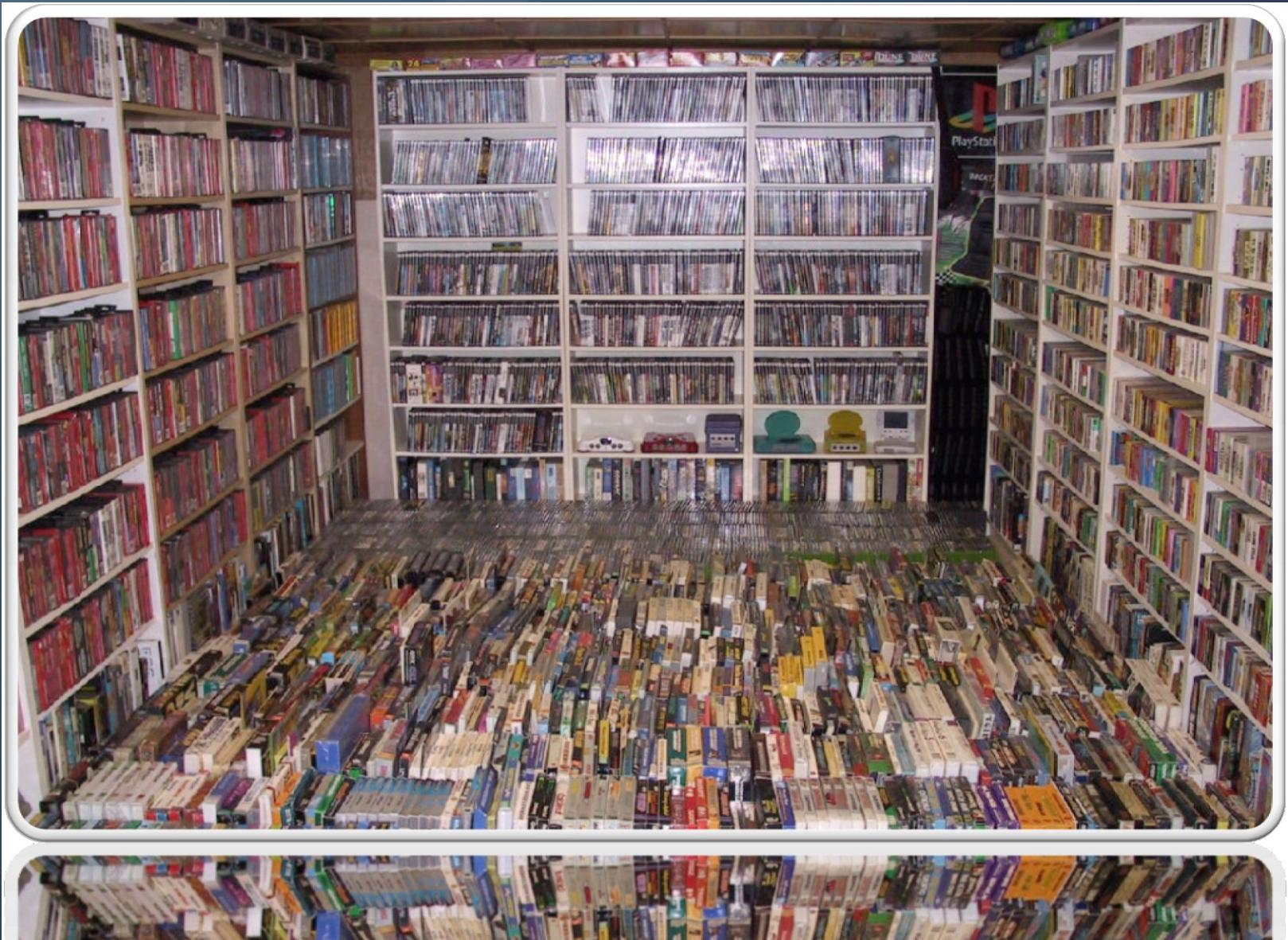


Ubisoft 2007
\$ 662.7 million



Second Life
\$5 million a month

Gaming business is huge



Everybody is gaming



xna

Super realistic



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Simple, but a lot of \$\$\$



Simple, but a lot of \$\$\$



How is Microsoft related to this?

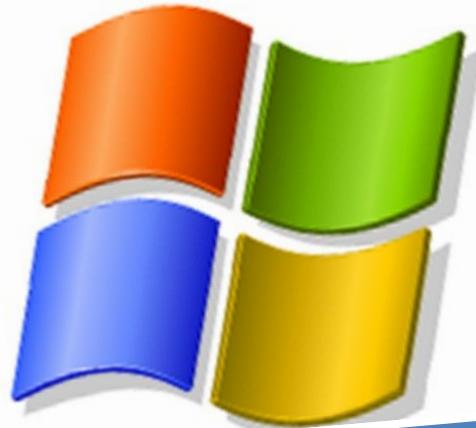
GAMING AND MICROSOFT



Microsoft & gaming

- What's the biggest gaming platform in the world?

Microsoft & gaming



Microsoft's Windows

Microsoft & gaming



Microsoft's Windows



Microsoft's DirectX

Microsoft & gaming



Microsoft's Windows



Microsoft's Xbox



Microsoft's DirectX

Microsoft & gaming



Microsoft & gaming



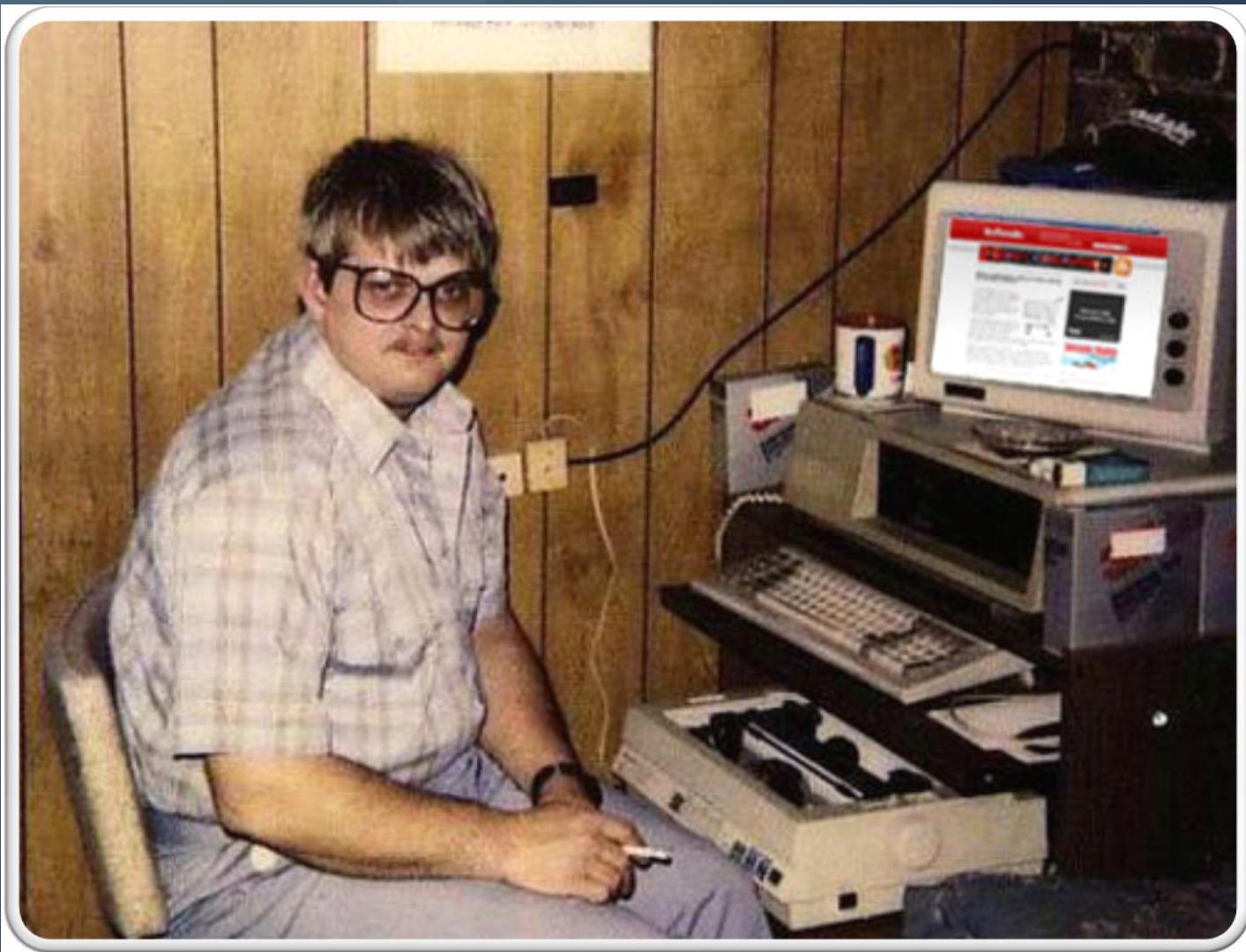
Microsoft & gaming



Microsoft's Zune

Microsoft's Xbox 360

Game programming is hard



xna

XNA makes development easy



Demo time!

- Create a game in ±60 minutes



You can be part of it

DEMO TIME!



Theorie

XNA OVERVIEW



XNA

- Set of tools for game development
- Managed environment
- One big platform
- Makes game development easy

XNA Platform

Framework

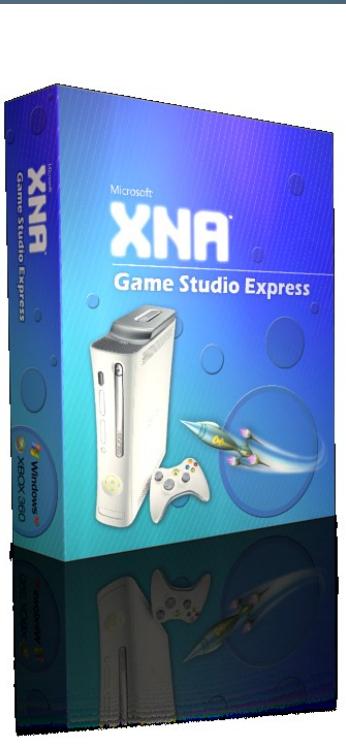
Build

XNA

Content
Pipeline

Game Studio

XNA Game Studio



XNA Game Studio Express

- non-commercial game development

XNA Game Studio Professional

- Commercial license
- Not available yet



XNA Framework

- Microsoft .NET CLR 2.0
- Cross-Platform Game Development
 - Windows XP
 - Windows Vista
 - Xbox 360 ☺
- Easy to learn and self explaining API

XNA Framework Overzicht

Games

Starter Kits

Code

Content

Components

Extended
Framework

Application Model

Content Pipeline

Core
Framework

Graphics

Audio

Input

Math

Storage

Platform

Direct3D

XACT

XINPUT

XContent

Legend

XNA Provides

You Provide

Community



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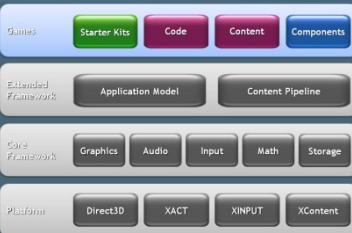
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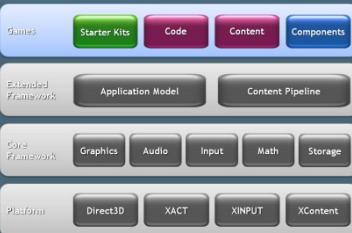


Starter Kits

“Take our games and make them your own”

- Complete game
 - Starting point
 - Hit F5 and run
 - Documentation and tutorials
- Availability
 - Free
 - Microsoft will continue and create more

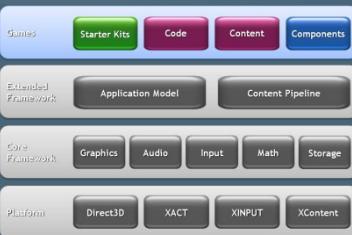




Components

- Integrates within the gameloop
 - Initialize, Load, Update, *Draw*, Unload
- Create and reuse code
- 3rd party components
- Community has a standard
- Menus, virtual keyboard, game engine, game info, radar's, map, etc...





Components

- Example
 - Virtual keyboard for XBOX 360



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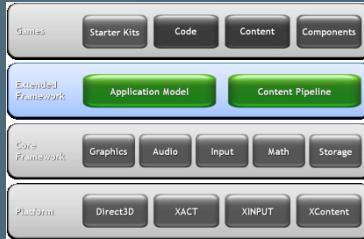
Legend

XNA Provides

You Provide

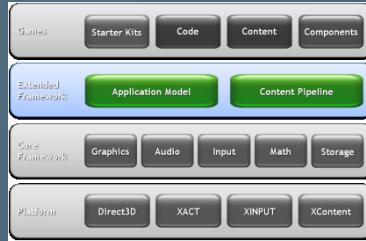
Community





Application Model

- Platform abstraction
 - Don't worry about the platform
- First line of code is for your game
- Game class
 - Easy startpoint

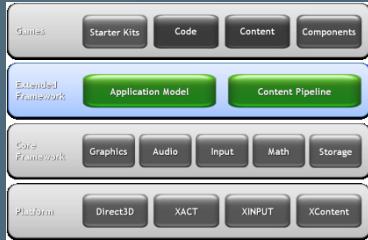


Application Model

Game Class, startpunt van je game

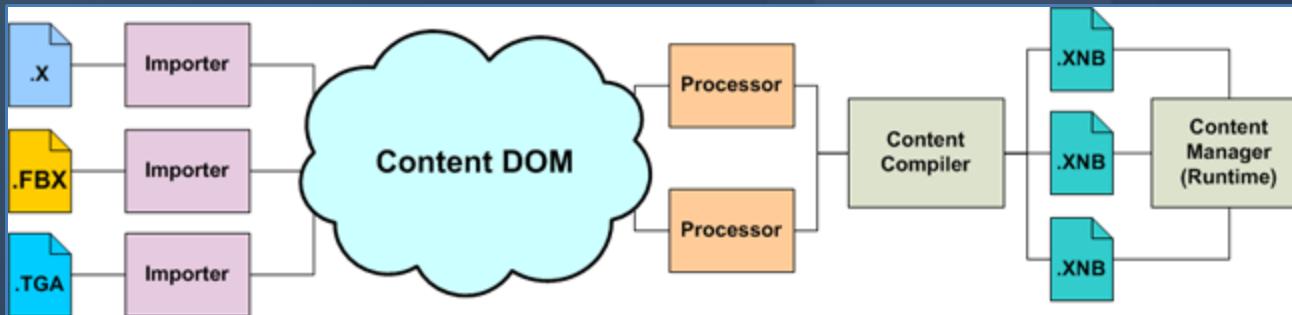
- Game
 - Initialize
 - LoadContent
 - Update
 - Draw
 - UnloadContent
- GameComponent,
DrawableGameComponent





Content Pipeline

- Extensible content processing framework
- 2D File Formats (.DDS, .BMP, .JPG, .PNG, .TGA)
- 3D File Formats (.FBX, .X)
- Material File Formats (.FX)
- Audio File Formats (.XAP)



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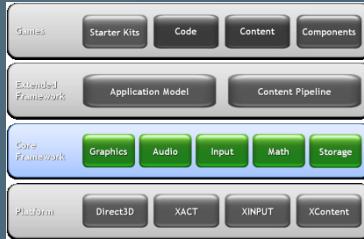
Legend

XNA Provides

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Community

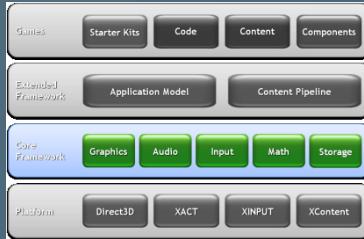




Core Framework

- Graphics
 - SpriteBatch, BasicEffect, Texture2d, GraphicsDevice, Model, VertexBuffer
- Audio
 - SoundBank, WaveBank, Cue, AudioEngine
 - Looping, Streaming en memory management
 - low-level buffer management
- Input
 - GamePad, Keyboard, Mouse





Core Framework

- Math
 - MathHelper.ToRadians(float angle), PiOver4
- Storage
 - Title Storage (Shaders, Meshes, Textures, Sounds...)
 - User Storage (Save games, Scores...)
 - Wordt geëmuleerd op het Windows Platform
- Network
 - NetworkSession, PacketReader, NetworkGamer



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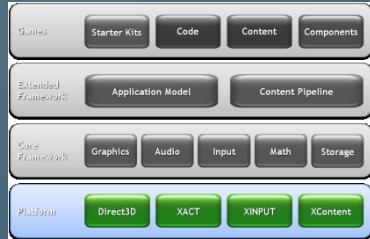
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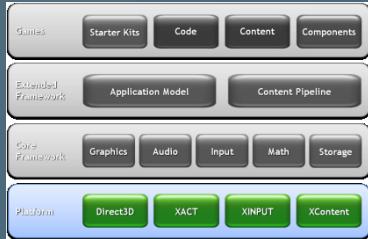
Community





Platform abstractie

- Varies for each platform
- Mono already provides a implementation



XACT

- Microsoft Cross-Platform Audio Creation Tool
- Enable audio for your games
- Compiles .wav files
- Add information to sounds
 - Looping, volume levels



Community

- 3D Models
 - Cars, Houses, humans, complete levels
- Lot of them are free
- <http://turbosquid.com/xna>



Community

- Example of a component
 - XNA Console



Deploy to the Xbox 360

- XNA Creators Club
 - 49 euro 4 months
 - 99 euro 1 year
- What do you need on your Xbox 360?
 - Xbox Live Account
 - XNA Game Launcher
 - Connection to the computer

XNA++, whats next?

- Support for Visual Studio 2008
- Support for Zune player
- Support for Linux
- Support for Mac OSX





NINTENDO'S WII!

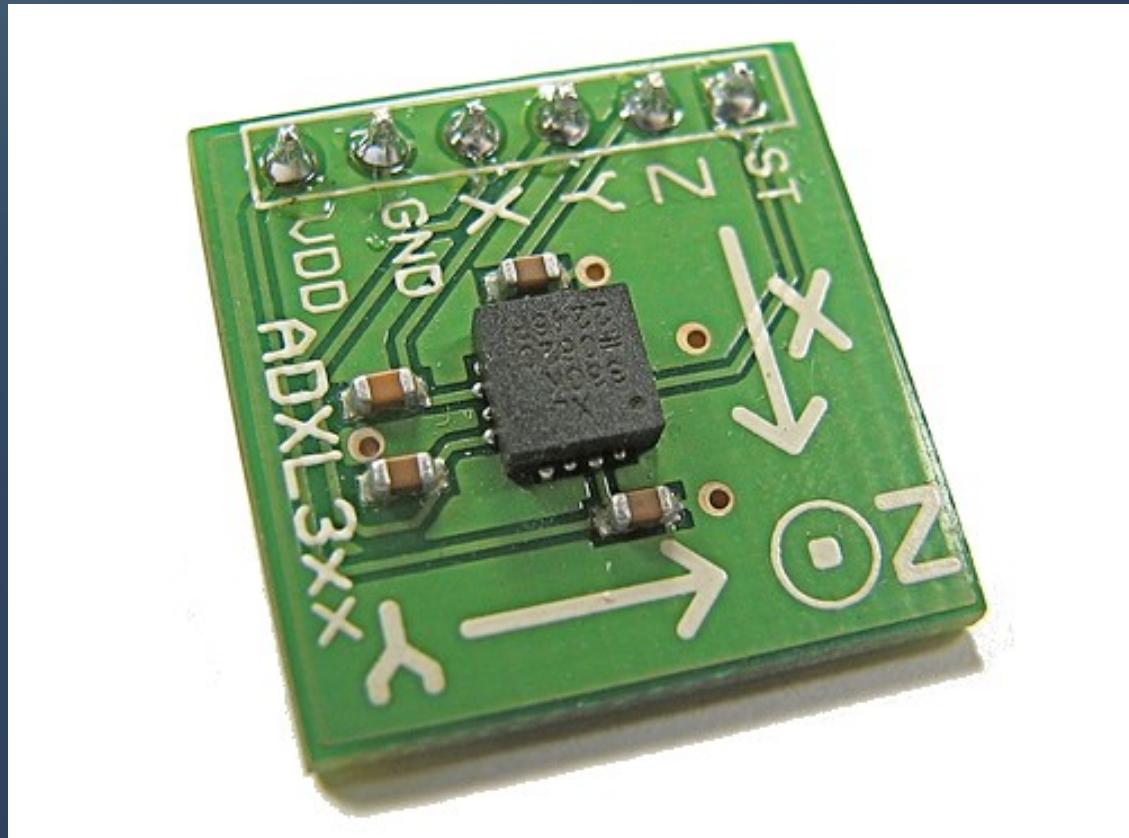
Wiimote

- Buttons
- Accelerometer
- IR-camera
- Buzzer
- Leds
- Bluetooth

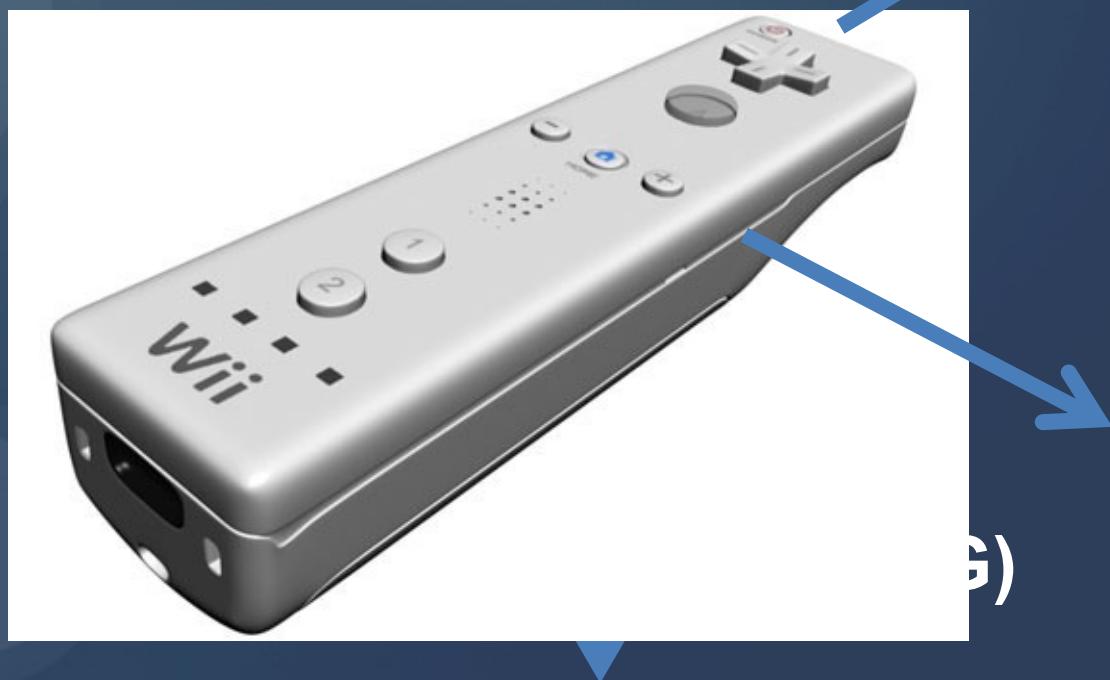


Accelerometer

- ADXL330 3-Axis $\pm 3\text{g}$ iMEMS® Accelerometer



Accelerometer



Accelerometer

Idle



Accelerometer

Up



Accelerometer

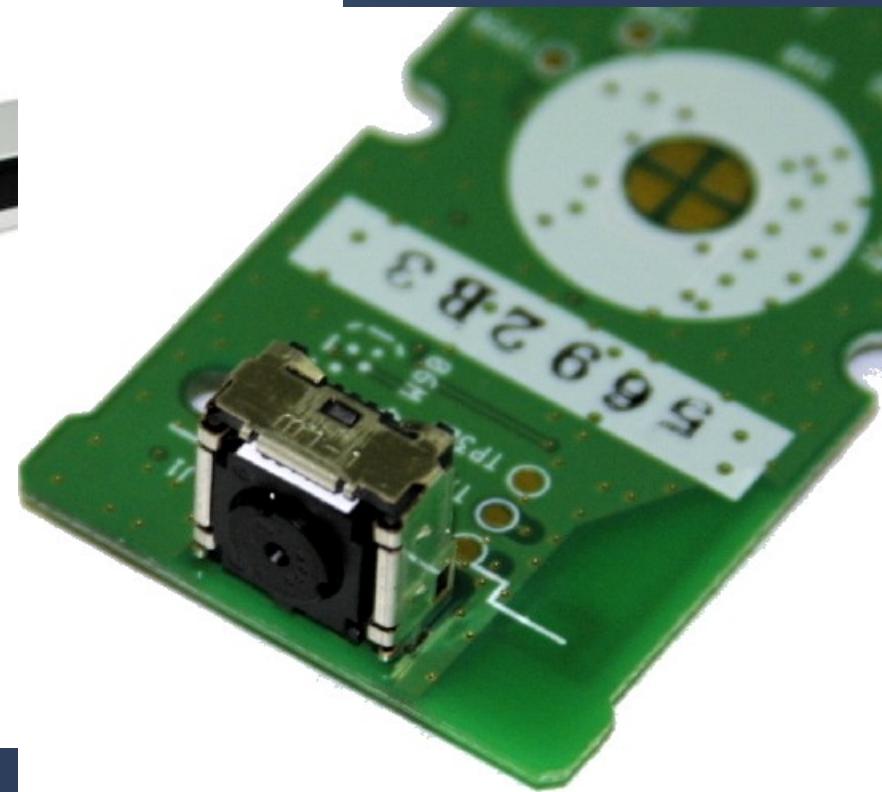
Down



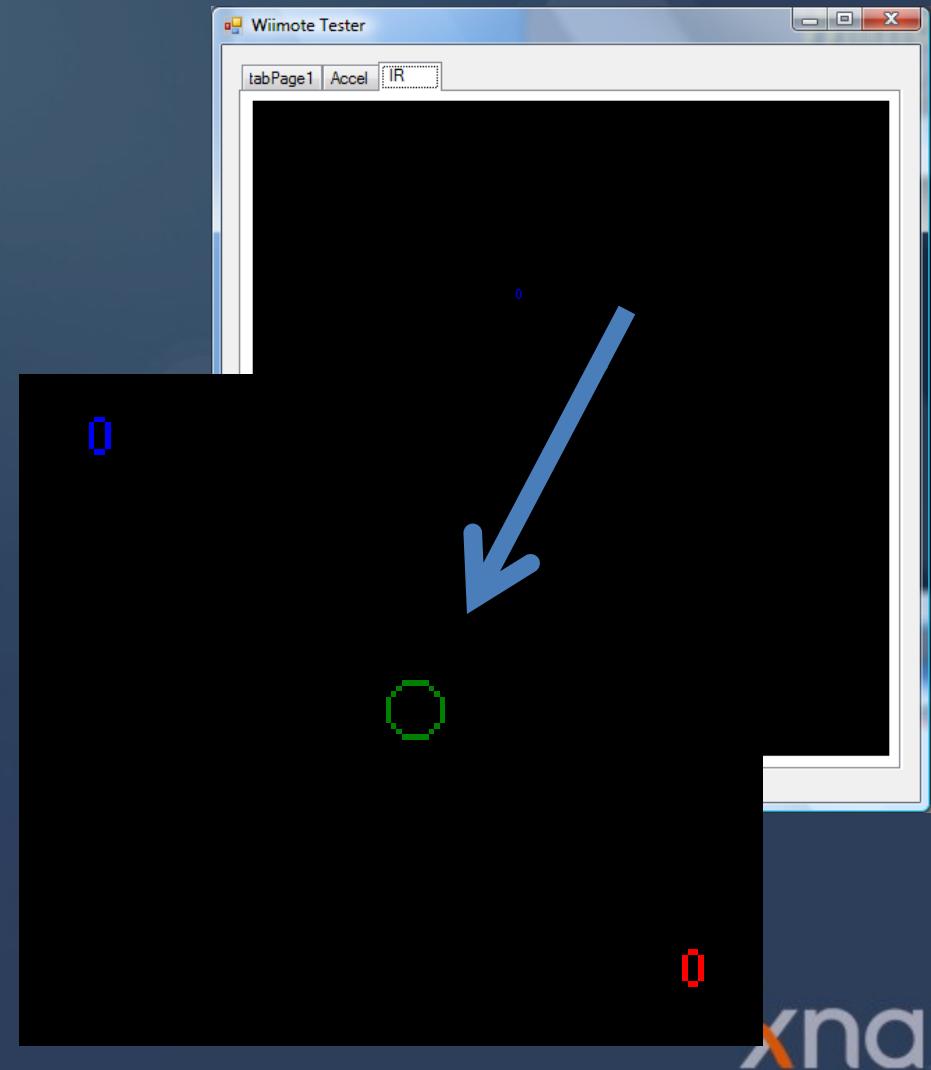
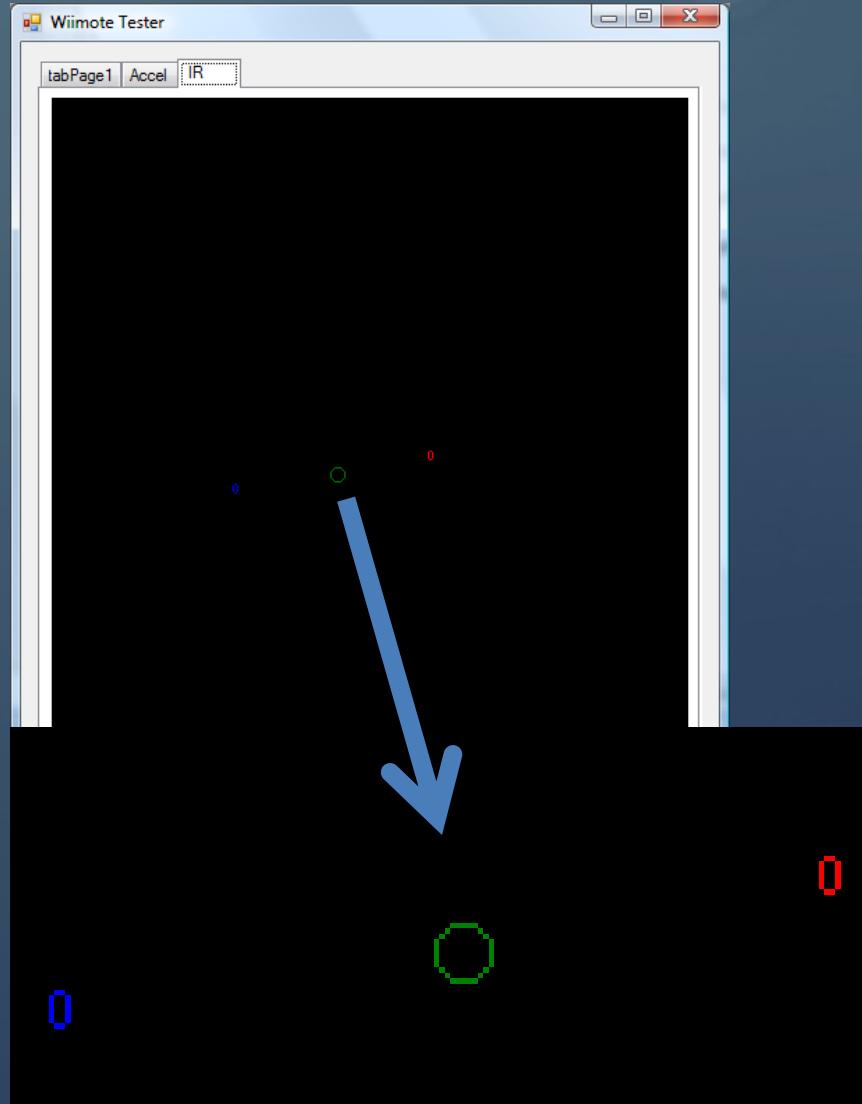
IR-camera

- PixArt optical sensor

Multi-Object Tracking engine (MOT)

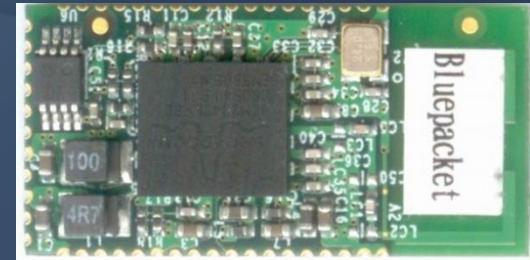


IR-camera



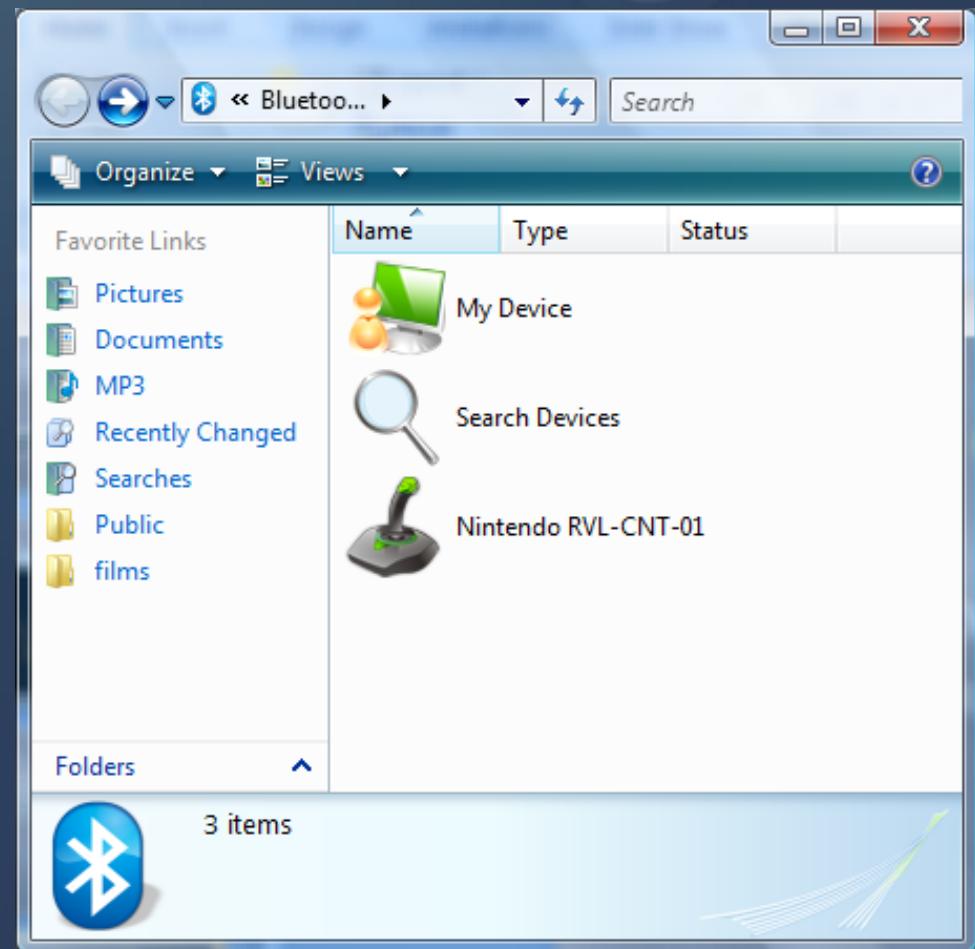
Bluetooth

- BCM2042
Advanced Wireless Keyboard/Mouse
Bluetooth® Chip
- HID Device



Wiimote -> PC

- OS
- Bluetooth Device
- Bluetooth stack



API's

RMX Automation

wiimote-api

WiimoteLib

GlovePIE

WiinRemote

libwiimote

WMD Wiiewer

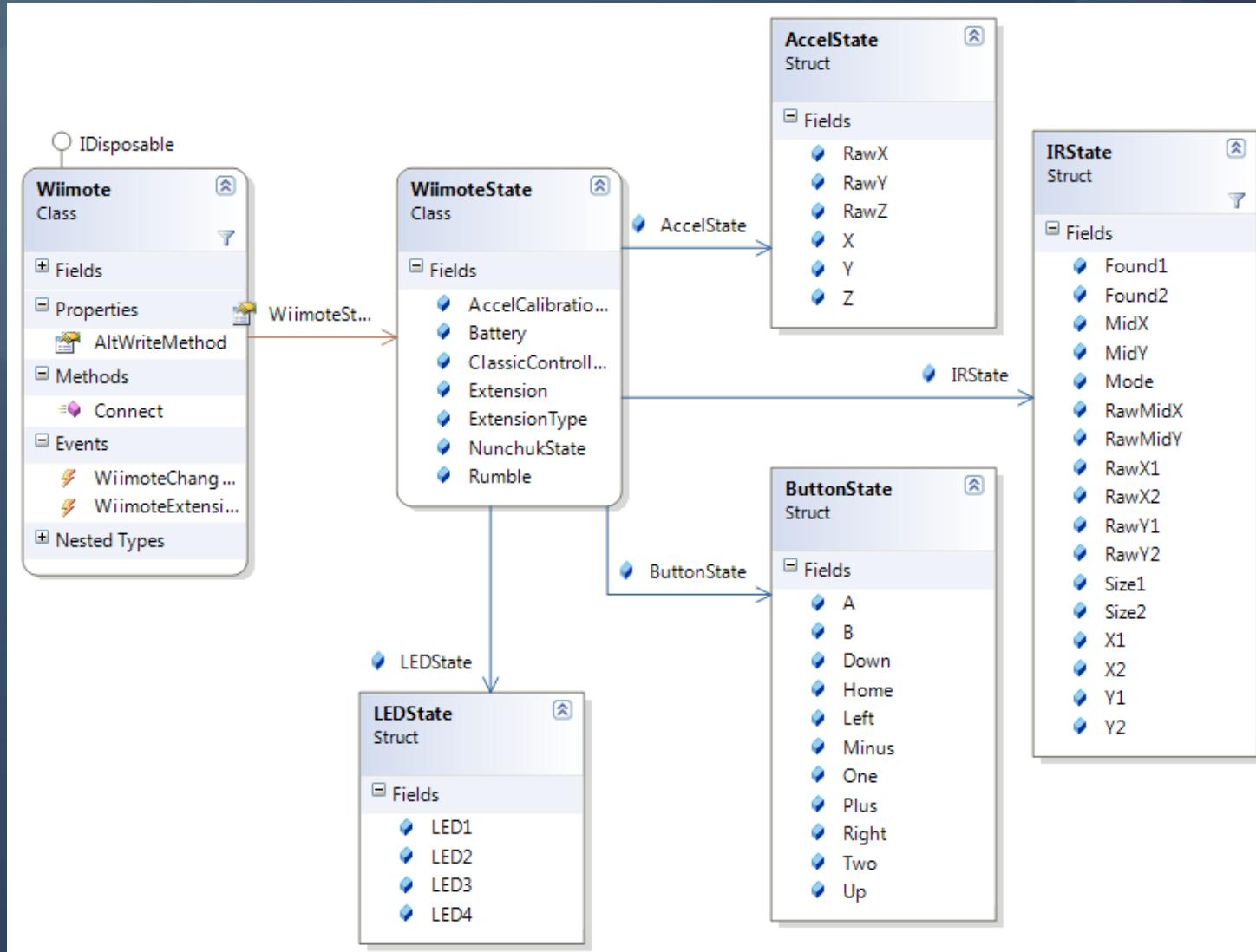
WiimoteCPP

WiiYourself!

Wiimotecom



WiimoteLib classes



Simplicity

```
Wiimote wiimote = new Wiimote();
wiimote.Connect();

wiimote.SetRumble(true);
wiimote.SetLEDs(false, true, false, true);

WiimoteState wiimoteState = wiimote.WiimoteState;

float accelX = wiimoteState.AccelState.X;
float accelY = wiimoteState.AccelState.Y;
float accelZ = wiimoteState.AccelState.Z;
```

Demo time!

- Flying with the Wii



Resources

- <http://creators.xna.com/>
- <http://blogs.msdn.com/xna>
- <http://www.turbosquid.com/xna>
- <http://xbox360homebrew.com>
- <http://www.riemers.net>
- <http://www.xnadevelopment.com>
- Search for XNA at ~~Google~~ with Live Search

Questions?

