

# **EXHIBIT I**

## **Volume 1**

27th Chaos Communication Congress

# Console Hacking 2010

PS3 Epic Fail

**fail0verflow**

bushing, marcan, segher, sven



# Who are we?

- In 2008 at 25c3 these teams worked together as 'WiiPhonies'
- We won the 25c3 CTF
- We changed our name to 'Fail Overflow'
  - Not trademark infringing
  - The domain was available
  - The ratio of fail to win is high.

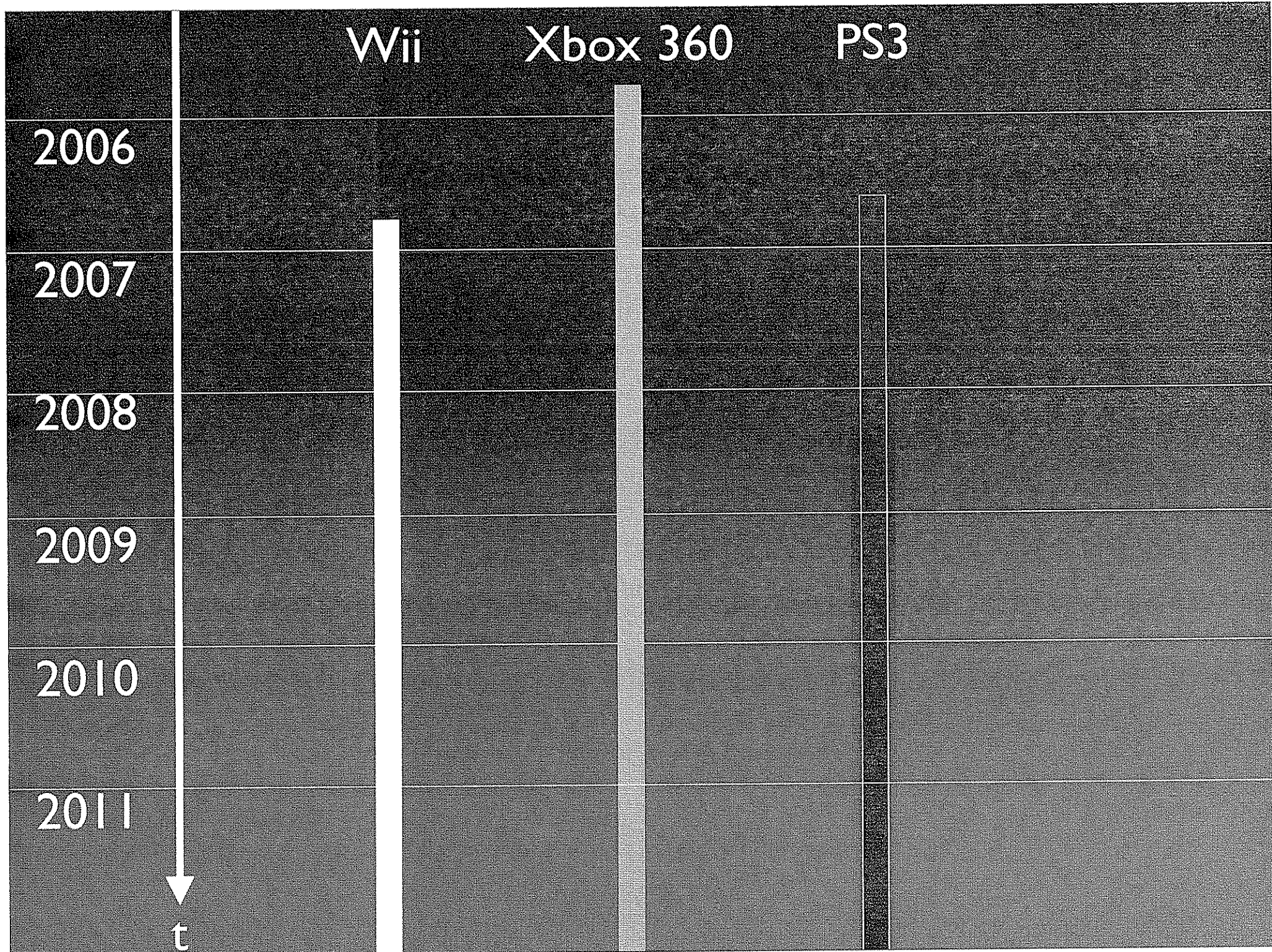
We've been collaborating on various embedded and thought expansive projects, the most famous of which that hit the press earlier this year was the full reconstruction of the \$REDACTED allowing \$REDACTED to be completely broken, that was a fun couple of weeks.



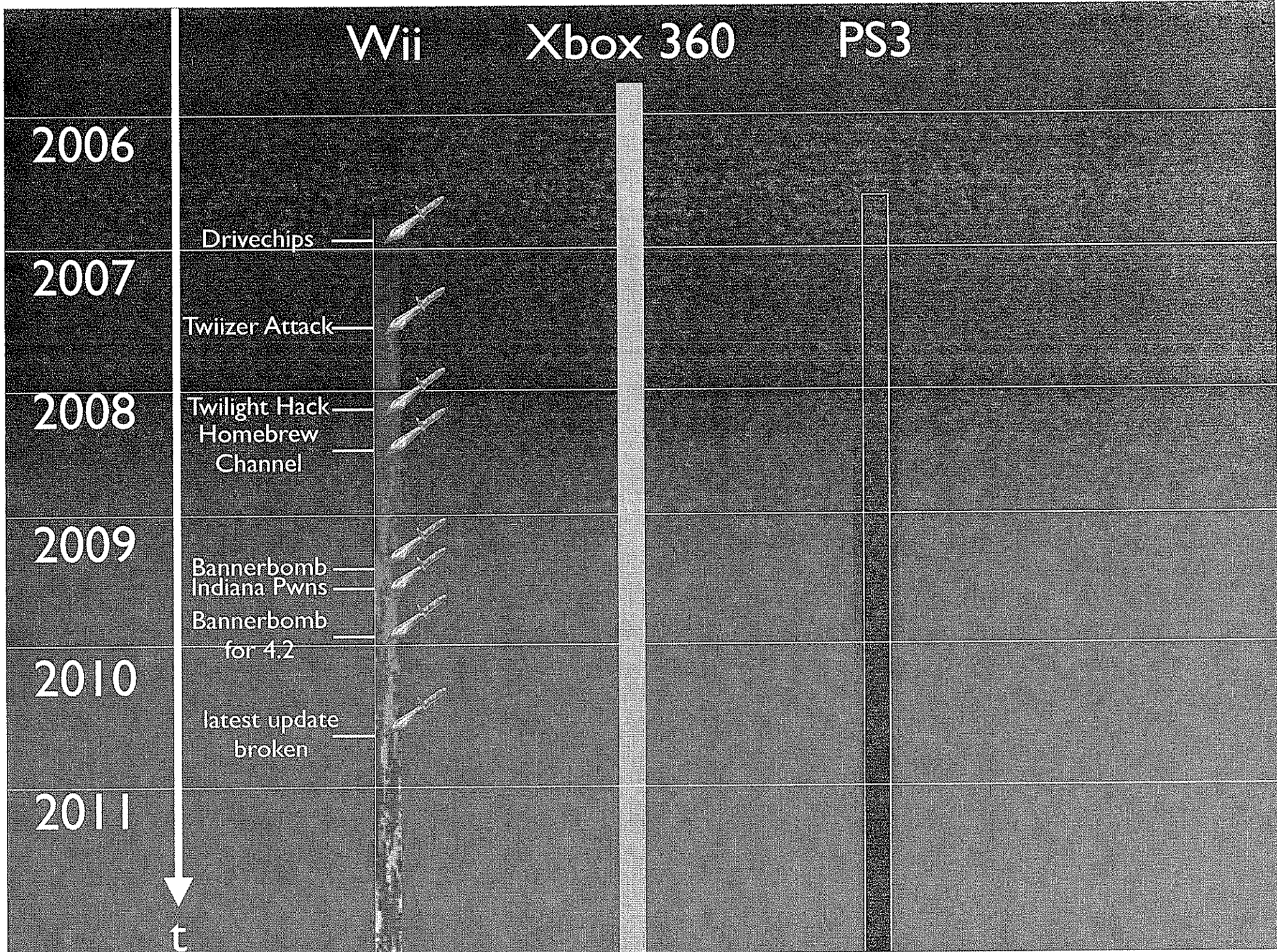
# Wii had a good run

- 3 years, 9 firmware updates, 1 real feature
- 73 mil. consoles, 30 mil. vuln. bootloaders
- 1 million users of Homebrew Channel

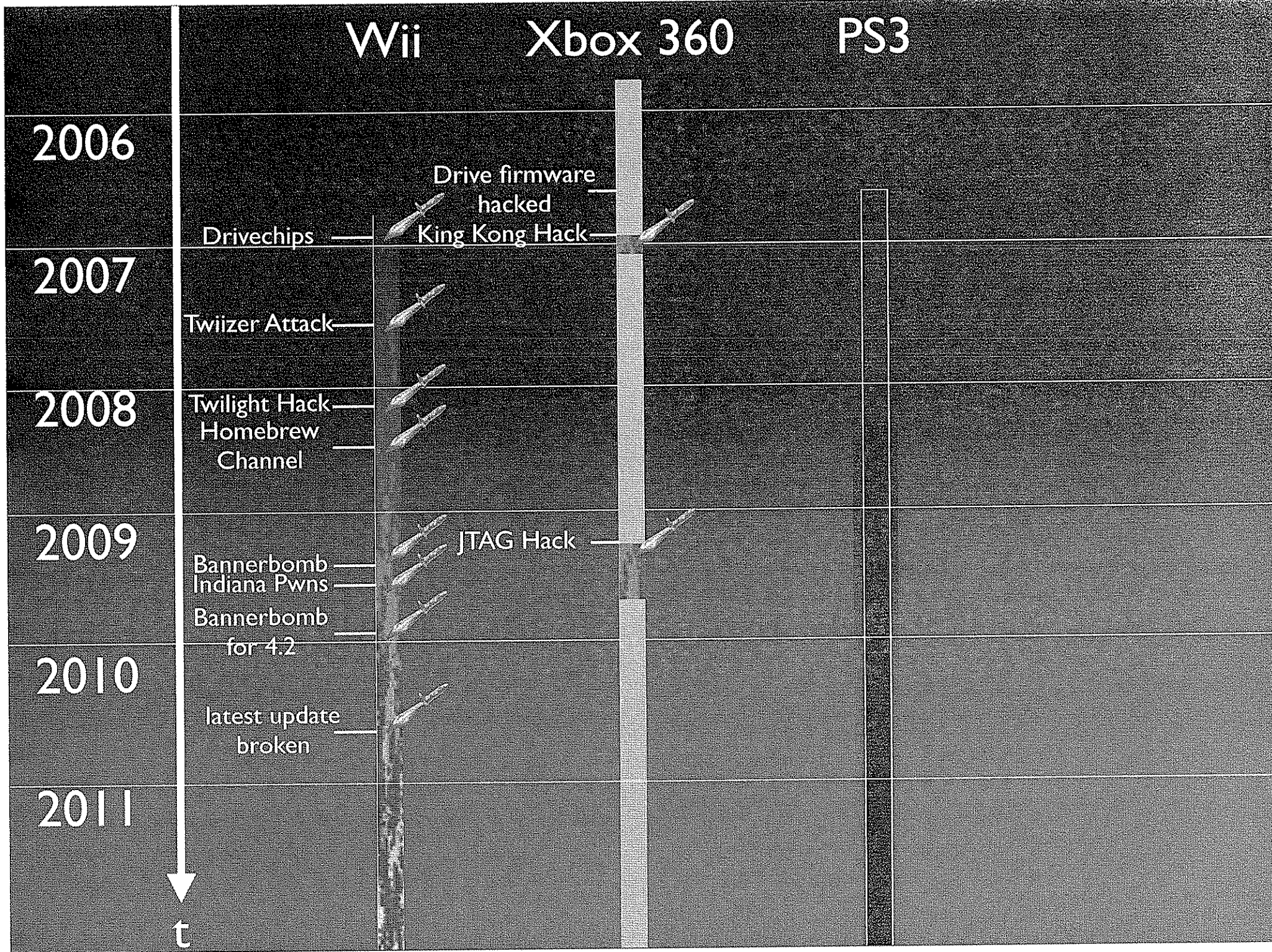




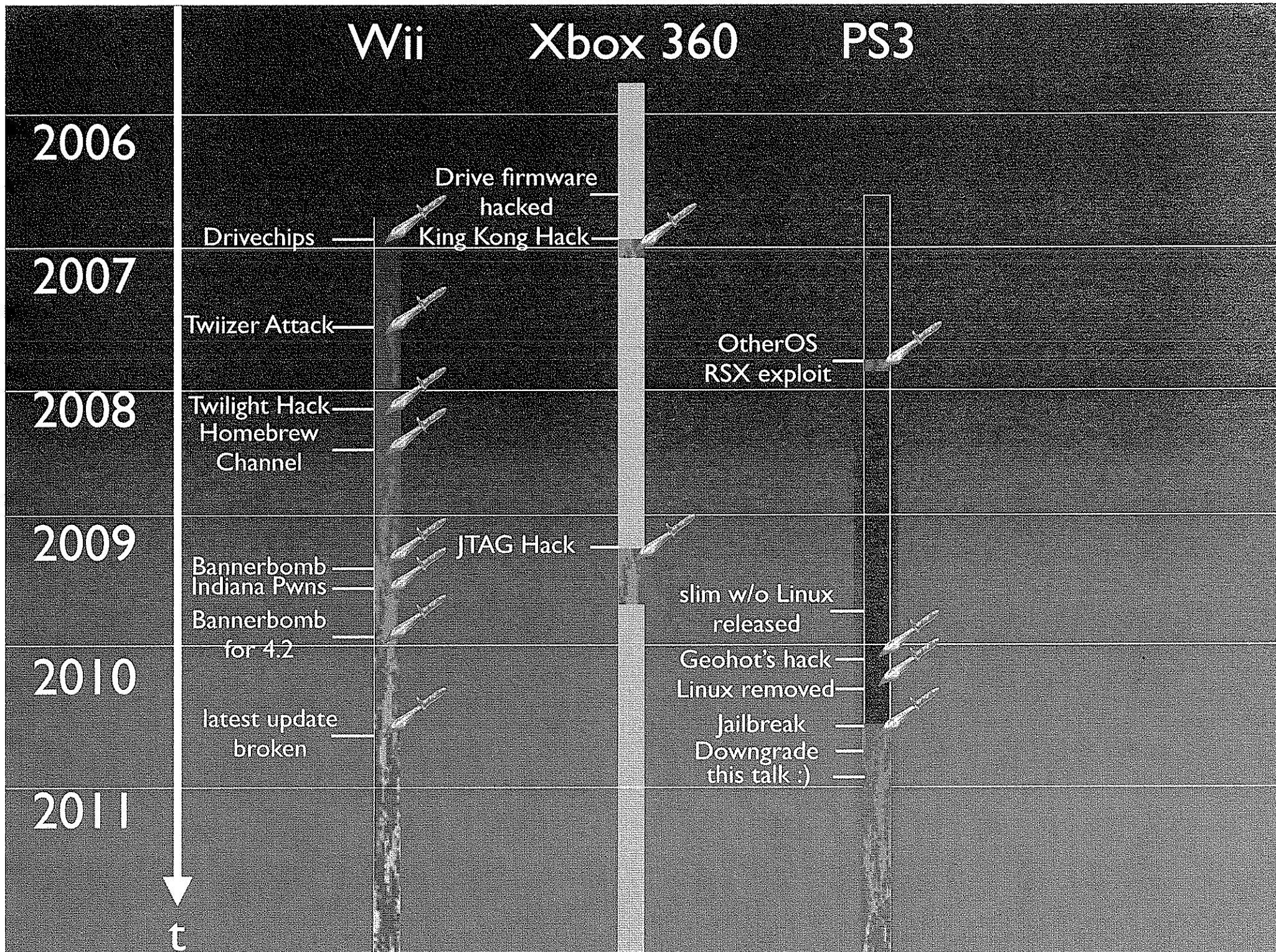


















**device**

**PS2**

**dbox2**

**GameCube**

**Xbox**

**iPod**

**DS**

**PSP**

**Xbox 360**

**PS3**

**Wii**

**AppleTV**

**iPhone**



| <b>device</b>   | <b>y</b> |
|-----------------|----------|
| <b>PS2</b>      | 1999     |
| <b>dbox2</b>    | 2000     |
| <b>GameCube</b> | 2001     |
| <b>Xbox</b>     | 2001     |
| <b>iPod</b>     | 2001     |
| <b>DS</b>       | 2004     |
| <b>PSP</b>      | 2004     |
| <b>Xbox 360</b> | 2005     |
| <b>PS3</b>      | 2006     |
| <b>Wii</b>      | 2006     |
| <b>AppleTV</b>  | 2007     |
| <b>iPhone</b>   | 2007     |



| <b>device</b>   | <b>y</b> | <b>security</b>  |
|-----------------|----------|--|
| <b>PS2</b>      | 1999     | ?  |
| <b>dbox2</b>    | 2000     | signed kernel  |
| <b>GameCube</b> | 2001     | encrypted boot   |
| <b>Xbox</b>     | 2001     | encrypted/signed bootup, signed executables  |
| <b>iPod</b>     | 2001     | checksum   |
| <b>DS</b>       | 2004     | signed/encrypted executables   |
| <b>PSP</b>      | 2004     | signed bootup/executables  |
| <b>Xbox 360</b> | 2005     | encrypted/signed bootup, encrypted/signed executables, encrypted RAM, hypervisor, eFuses |
| <b>PS3</b>      | 2006     | encrypted/signed bootup, encrypted/signed executables, hypervisor, eFuses, isolated SPU  |
| <b>Wii</b>      | 2006     | encrypted bootup   |
| <b>AppleTV</b>  | 2007     | signed bootloader  |
| <b>iPhone</b>   | 2007     | signed/encrypted bootup/executables  |



| <b>device</b>   | <b>y</b> | <b>security</b>  | <b>hacked</b> |
|-----------------|----------|--|---------------|
| <b>PS2</b>      | 1999     | ?  | ?             |
| <b>dbox2</b>    | 2000     | signed kernel  | 3 months      |
| <b>GameCube</b> | 2001     | encrypted boot   | 12 months     |
| <b>Xbox</b>     | 2001     | encrypted/signed bootup, signed executables  | 4 months      |
| <b>iPod</b>     | 2001     | checksum   | <12 months    |
| <b>DS</b>       | 2004     | signed/encrypted executables   | 6 months      |
| <b>PSP</b>      | 2004     | signed bootup/executables  | 2 months      |
| <b>Xbox 360</b> | 2005     | encrypted/signed bootup, encrypted/signed executables, encrypted RAM, hypervisor, eFuses | 12 months     |
| <b>PS3</b>      | 2006     | encrypted/signed bootup, encrypted/signed executables, hypervisor, eFuses, isolated SPU  | not yet       |
| <b>Wii</b>      | 2006     | encrypted bootup   | 1 month       |
| <b>AppleTV</b>  | 2007     | signed bootloader  | 2 weeks       |
| <b>iPhone</b>   | 2007     | signed/encrypted bootup/executables  | 11 days       |