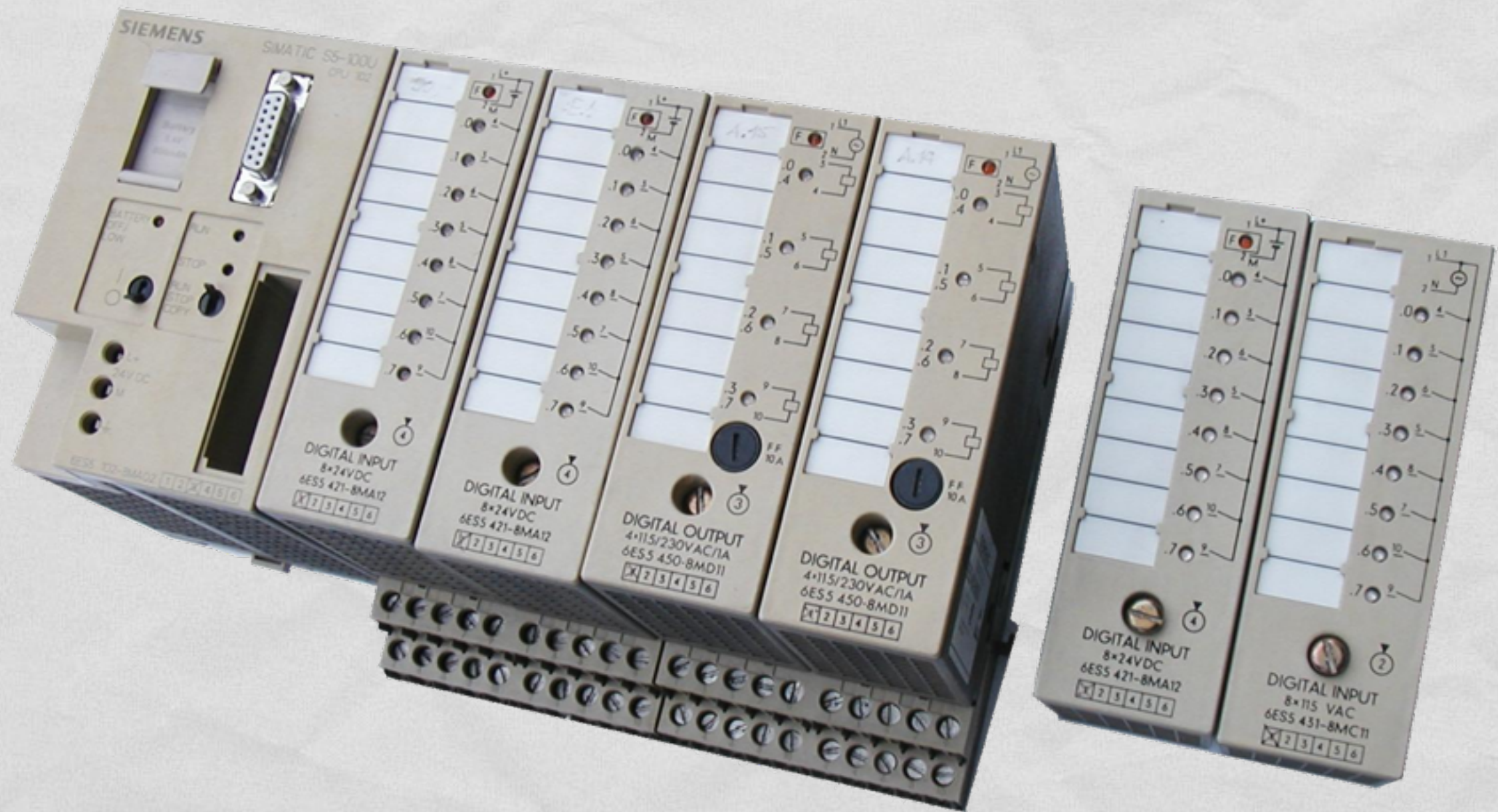


EMBEDDED SYSTEMS PROGRAMMING 2014-15

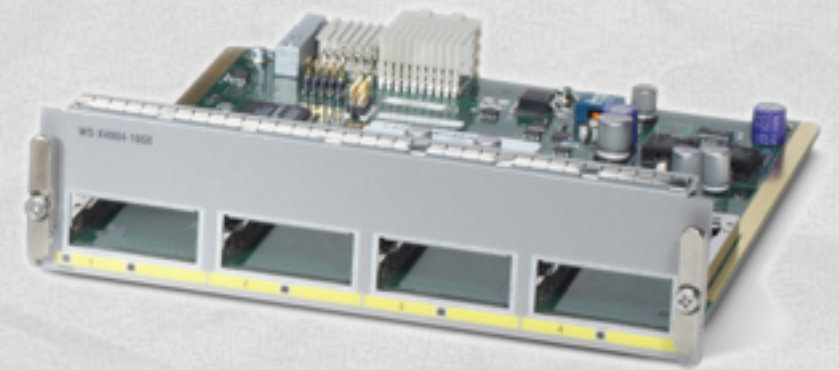
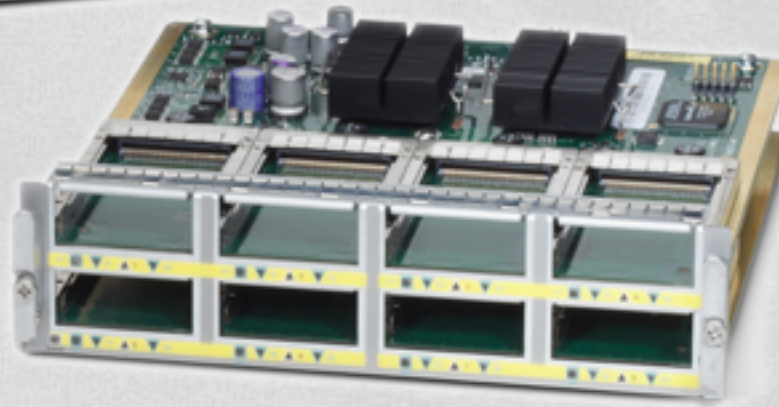
Introduction to the Course

What is an
embedded
system?

EMBEDDED SYSTEM?



EMBEDDED SYSTEM?



EMBEDDED SYSTEM?



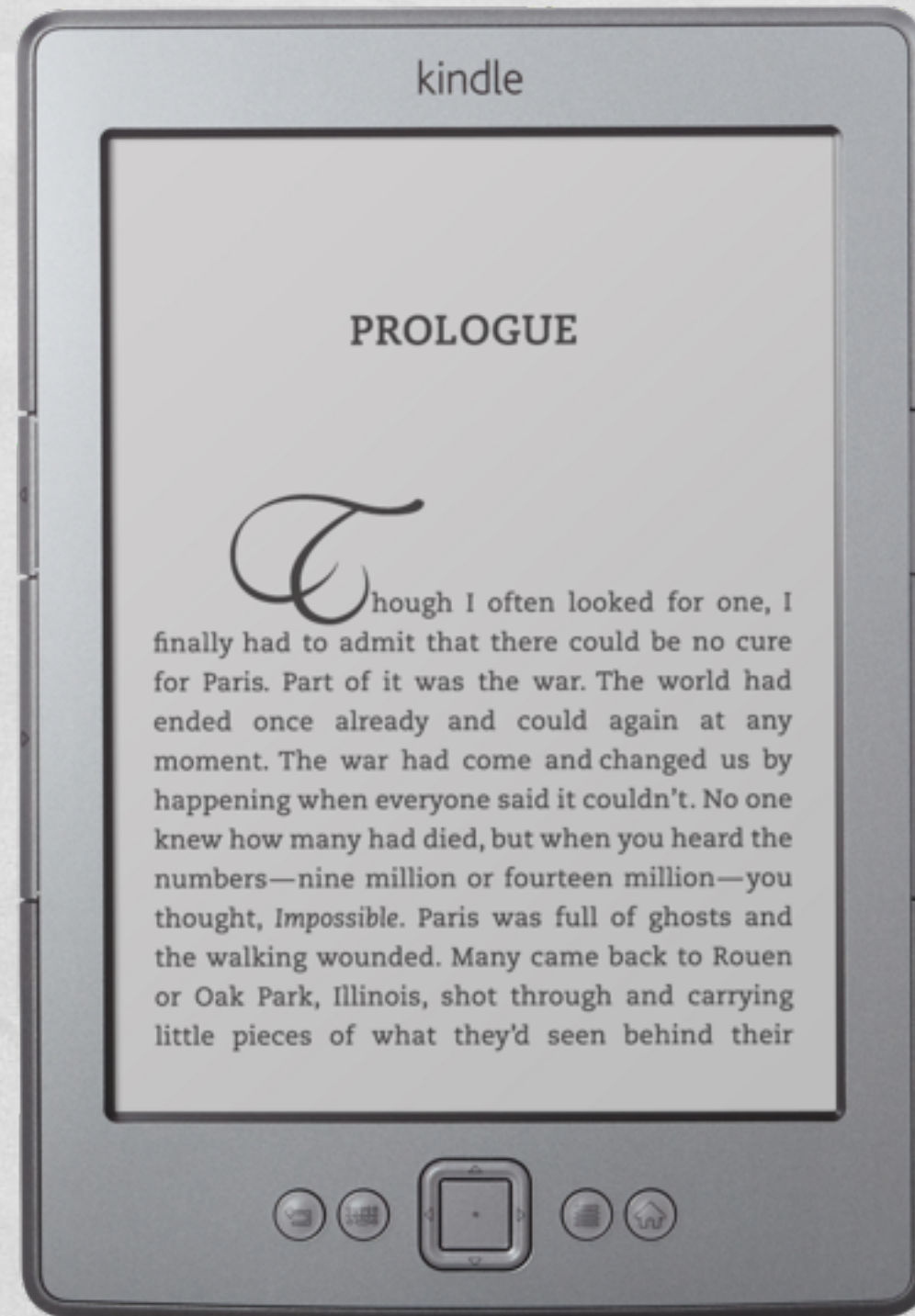
EMBEDDED SYSTEM?



EMBEDDED SYSTEM?



EMBEDDED SYSTEM?



EMBEDDED SYSTEMS

A computer is designed to be flexible, while an embedded system performs one or a few dedicated functions

IS IT ALWAYS TRUE?



EMBEDDED SYSTEMS

**An embedded system has
limited resources
(CPU, RAM, storage...)**

IS IT ALWAYS TRUE?

2004 PC



2.8 GHz CPU
512 MB RAM
120GB storage

2014 phone

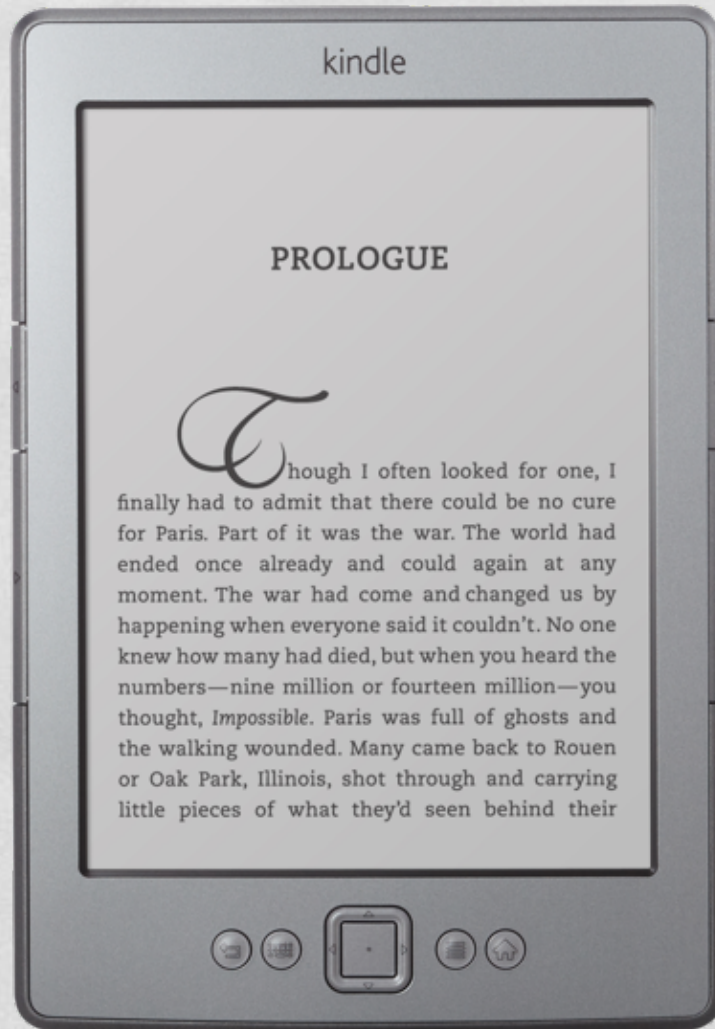


2.7 GHz CPU (4x)
3072 MB RAM
64GB storage

EMBEDDED SYSTEMS

**An embedded system has
real-time constraints**

IS IT ALWAYS TRUE?



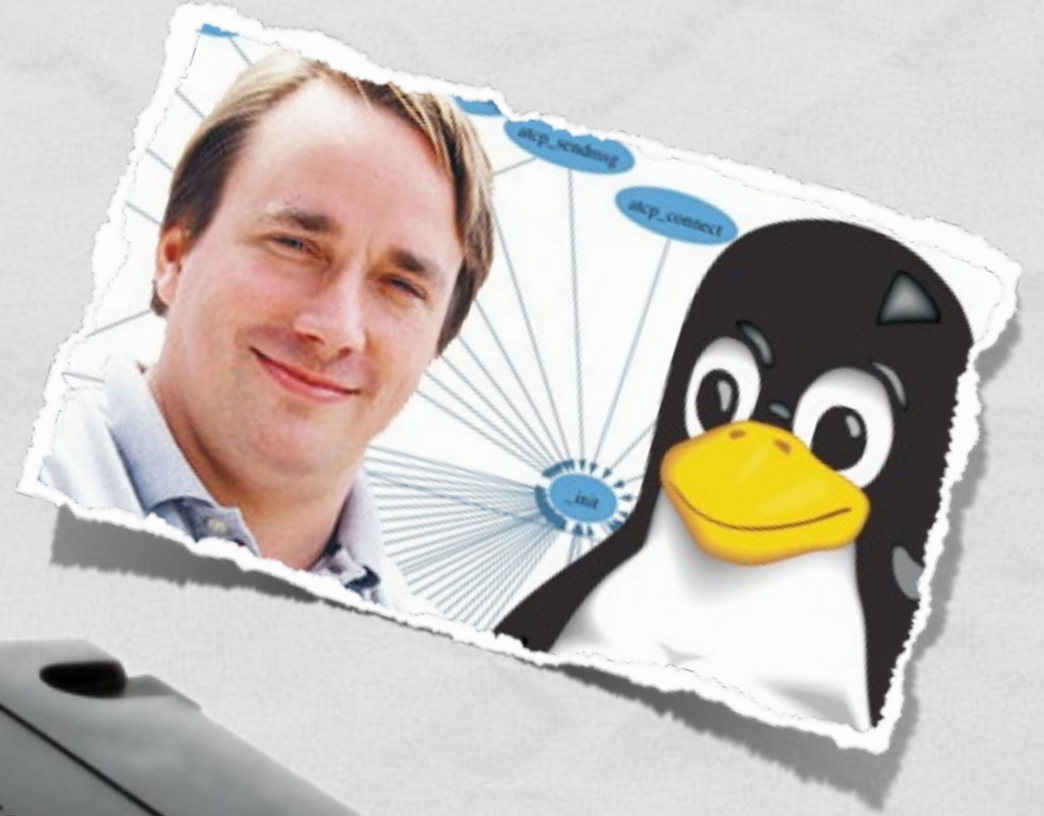
Java \Rightarrow garbage collection

\Rightarrow no deterministic response time

EMBEDDED SYSTEMS

**Embedded system are
programmed with
low-level languages
(assembly or the like)**

IS IT ALWAYS TRUE?



EMBEDDED SYSTEMS IN THIS COURSE

- **Complex, mobile platforms**
- **Enormous growth and popularity in recent years**
- **High-level programming, leveraging on sophisticated libraries**
- **Languages: Java, C++**



MOTIVATION (1/2)

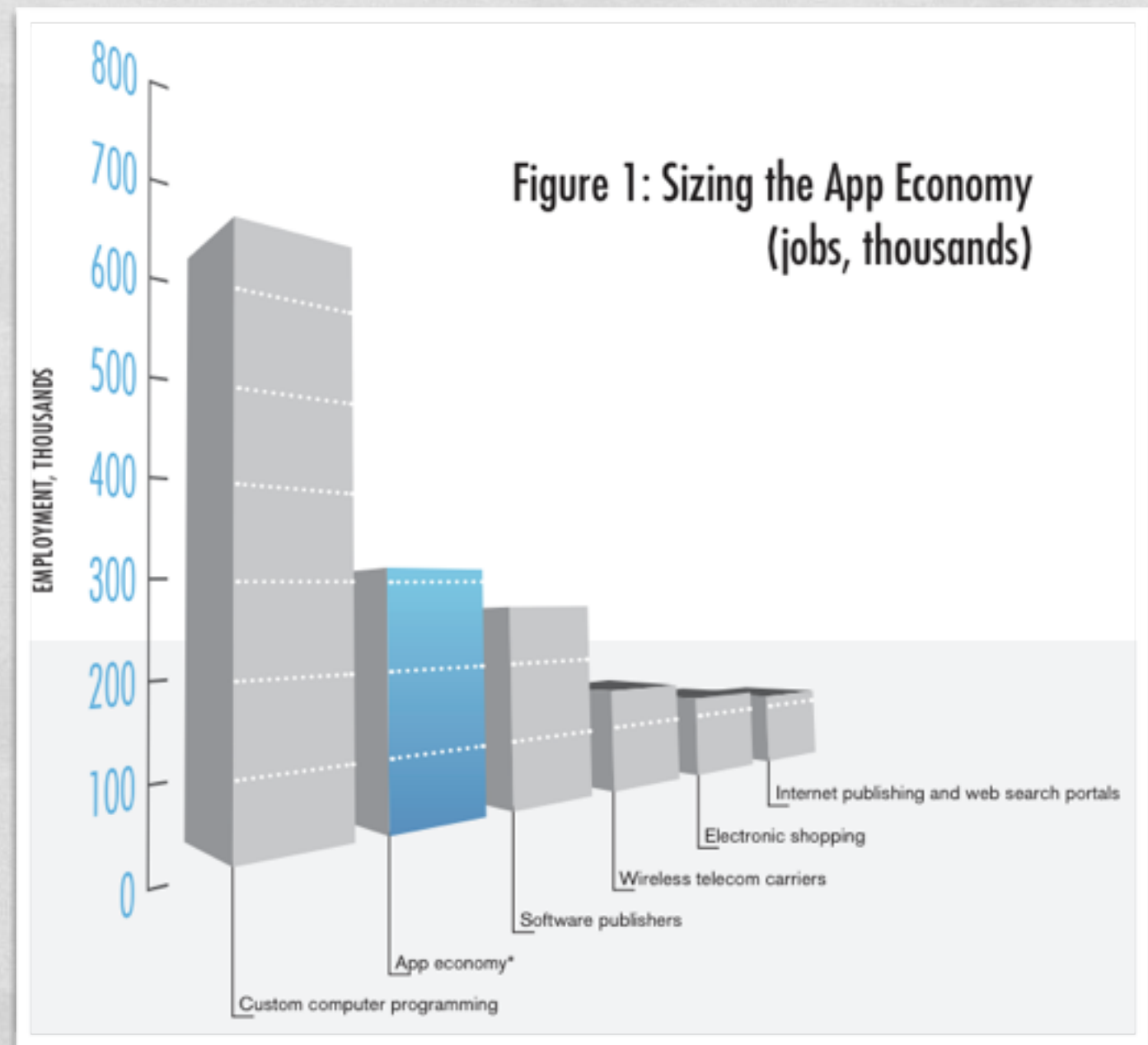


MOTIVATION (2/2)

- Hundreds of thousands of jobs in the “App economy”

Data for the U.S.

Source: [TechNet study, 02/2012](#)



AIM OF THE COURSE

Embedded Systems

PROGRAMMING

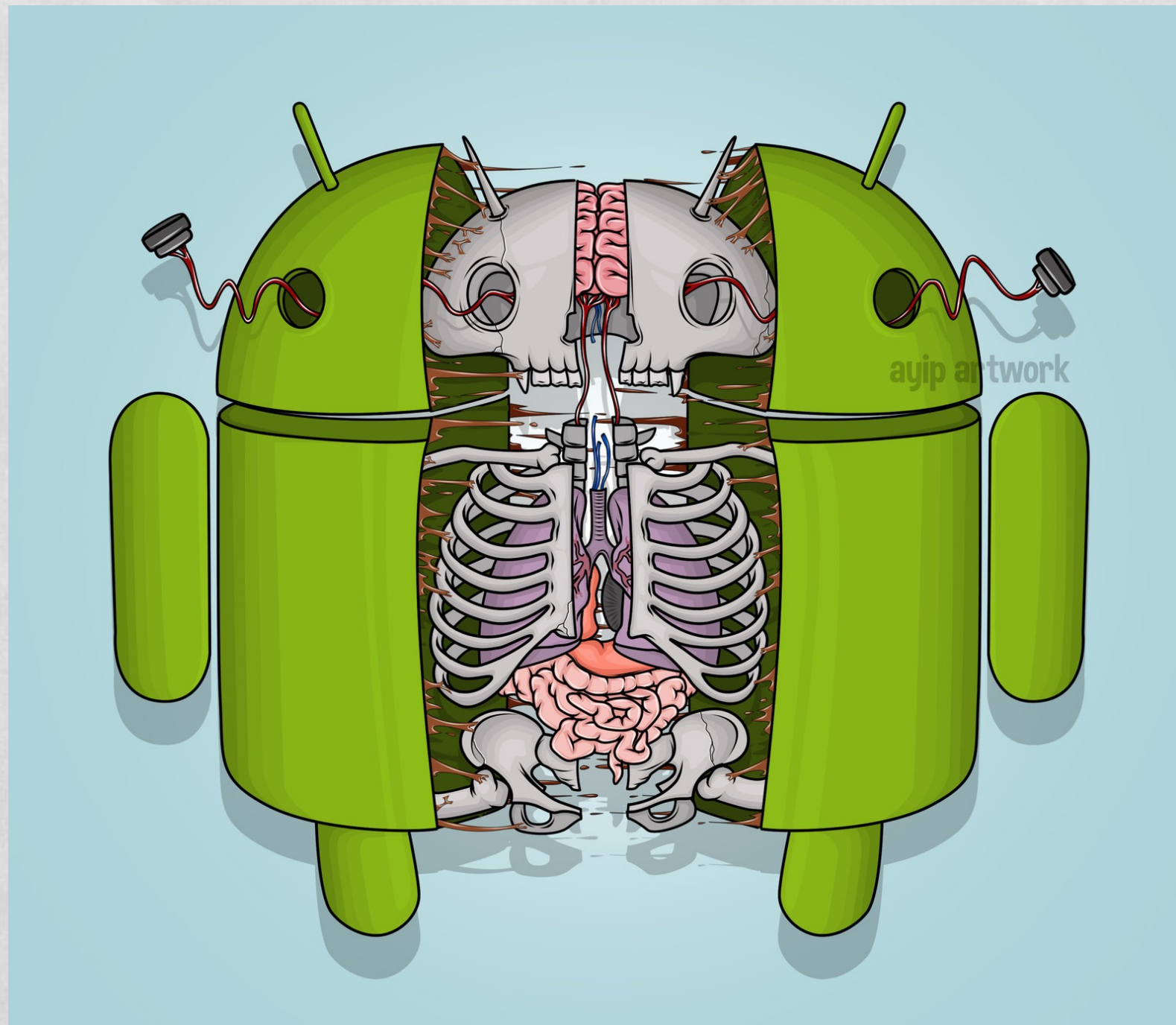


ANDROID



- $>10^9$ devices sold in 2014
- Cheap devices available
- Open source*
- Developed apps can be installed at no cost

NOT THIS...



...BUT THIS

Java



C++



LAST MODIFIED: FEBRUARY 23, 2015

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