Module Code: COU 07602

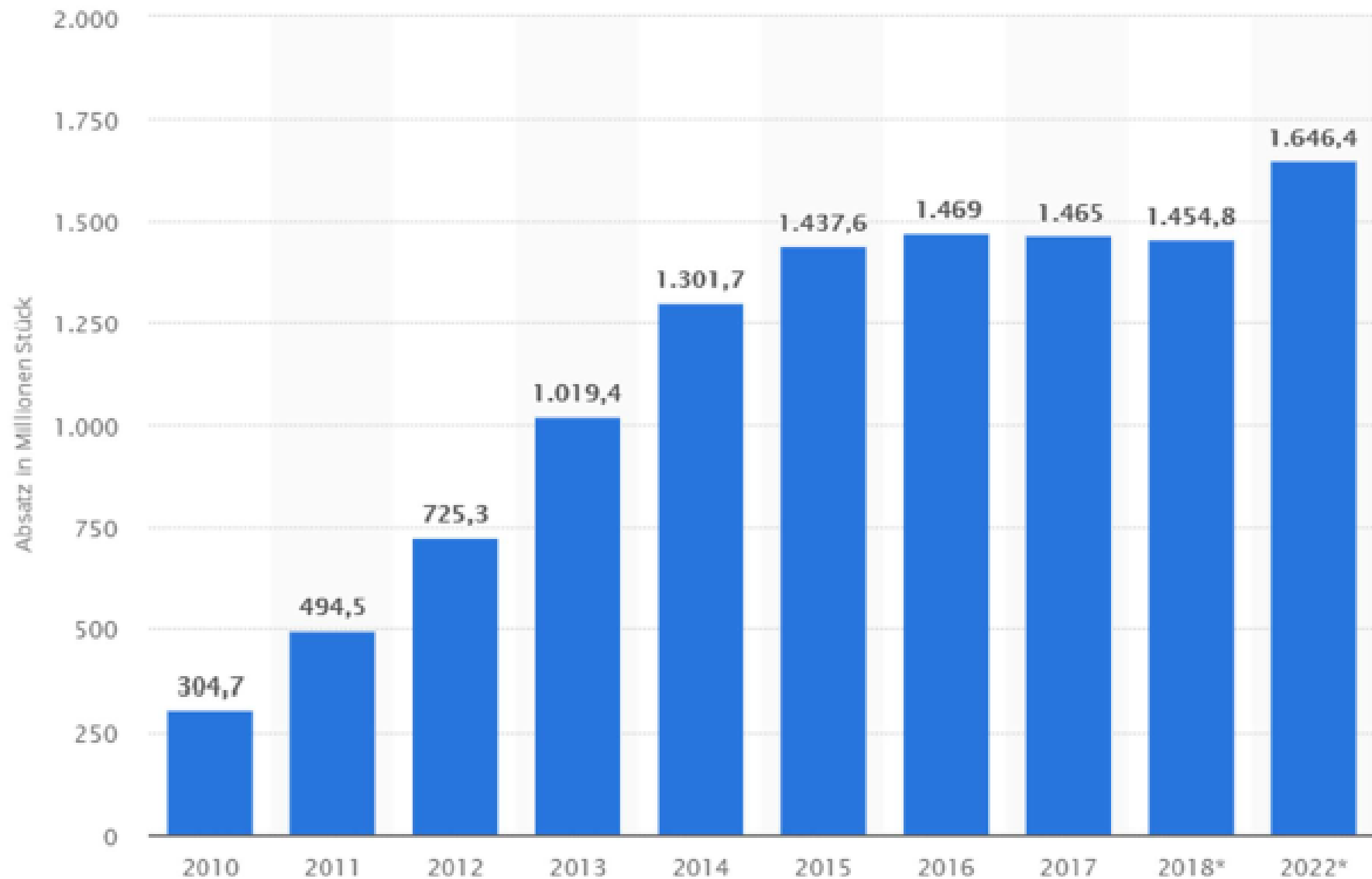**Module Name:** Mobile Application Development

Number of Credits: 9

1. Describe the principles of operating systems and system architecture in developing mobile based enterprise applications

a) Describe mobile Devices in development process

b) Describe mobile applications for various hardware and scripting technologies

c) Describe mobile operating system

d) Describe the system architecture in mobile devices

e) Describe constraints of mobile devices
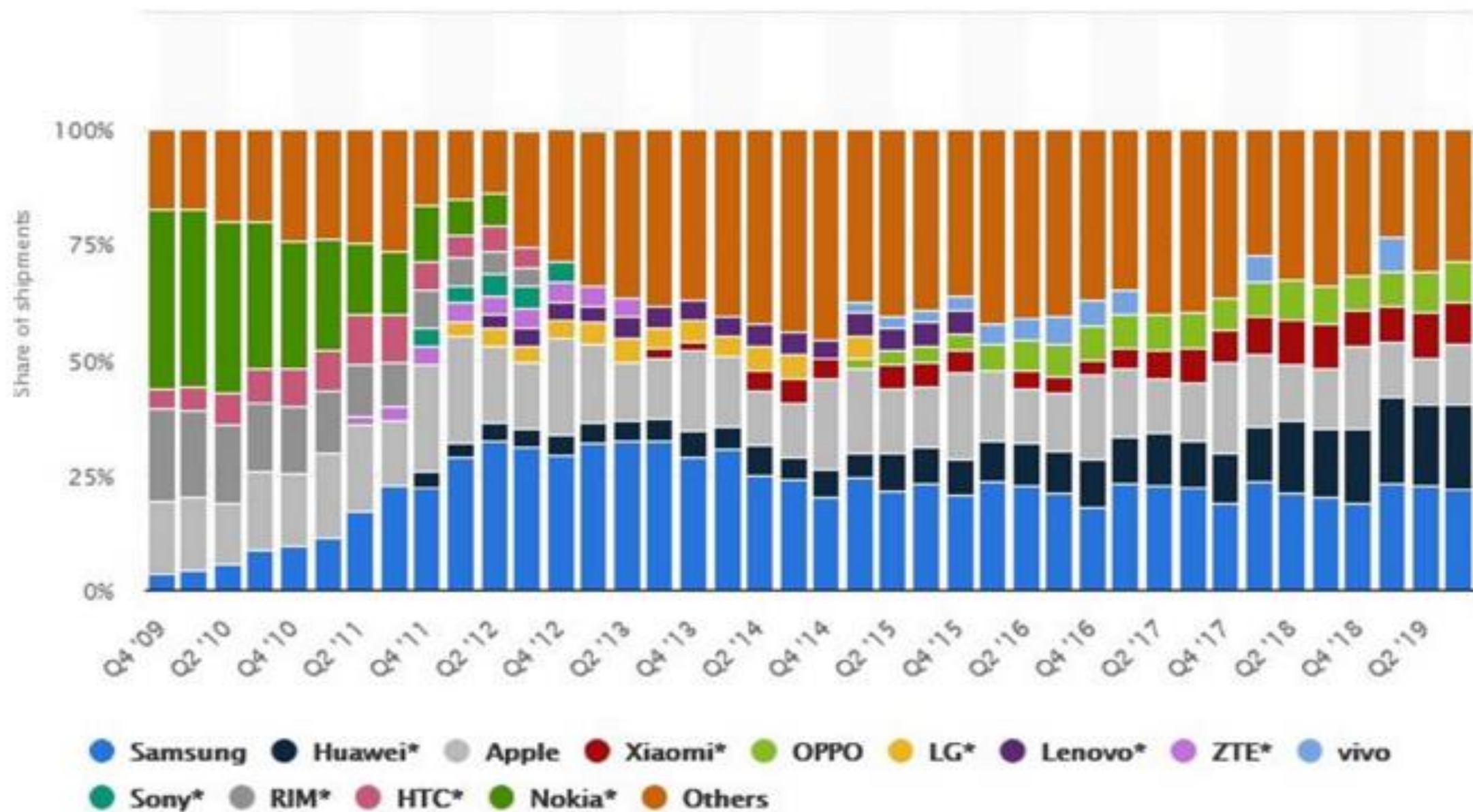
a) Describe mobile Devices in development process

ASSIGNMENT

Forecast: Sales of Smartphones Worldwide

Absatz in Millionen Stück

- 2010: 304,7
- 2011: 494,5
- 2012: 725,3
- 2013: 1.019,4
- 2014: 1.301,7
- 2015: 1.437,6
- 2016: 1.469
- 2017: 1.465
- 2018*: 1.454,8
- 2022*: 1.646,4

Reference : IDC, 2018

Sales of Mobiles by Manufacturer

Share of shipments

100%
75%
50%
25%
0%

Q4 '09, Q2 '10, Q4 '10, Q2 '11, Q4 '11, Q2 '12, Q4 '12, Q2 '13, Q4 '13, Q2 '14, Q4 '14, Q2 '15, Q4 '15, Q2 '16, Q4 '16, Q2 '17, Q4 '17, Q2 '18, Q4 '18, Q2 '19

● Samsung ● Huawei* ● Apple ● Xiaomi* ● OPPO ● LG* ● Lenovo* ● ZTE* ● vivo

● Sony* ● RIM* ● HTC* ● Nokia* ● Others

b) Describe mobile applications for various hardware and scripting technologies
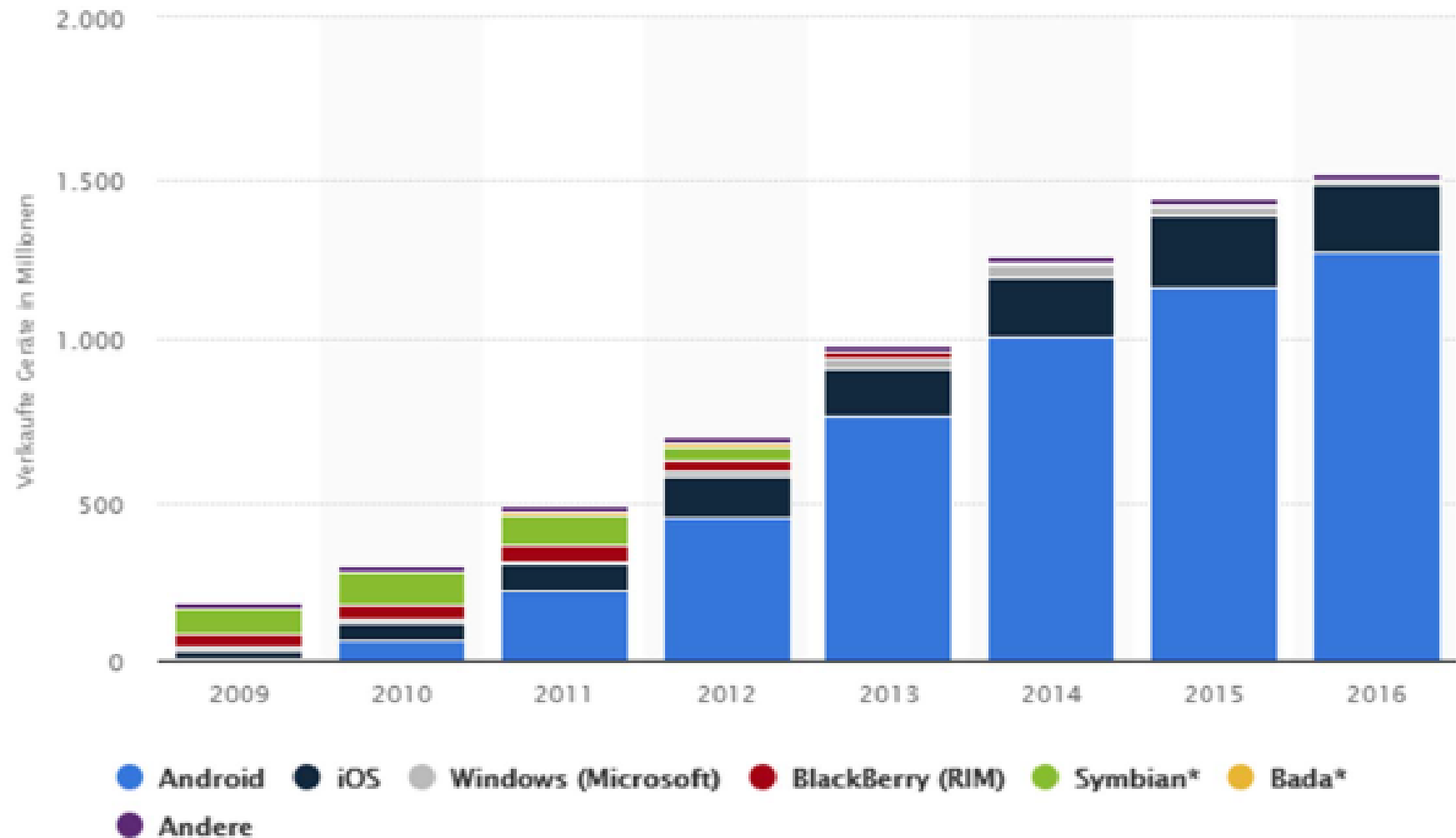
ASSIGNMENT

Mobile operating system

- **Android OS** – it is developed by Google and is one of the most popular operating systems today
- **Bada (Samsung Electronics)** –It was launched in 2010 and it's developed by Samsung
- **iPhone OS/iOS** –It was developed by Apple Inc. and originally released in 2007 for iPhone and iPod touch
- **Symbian OS** –It was developed by Symbian Ltd in June 1998 and in June 2008 it was acquired by Nokia
- **Windows Phone OS** –WP is a series of proprietary and closed source mobile operating system developed by Microsoft
- **Harmony OS** –It is the latest mobile operating system which is developed by Huawei for use of its devices. It is primarily designed for IoT devices.
- **Palm OS** –It is developed by Palm ltd for use on personal digital assistants (PDAs) it was introduced in 1966 and also known as Garner OS.
- **WebOS (Palm/HP)** –The WebOS is developed by Palm. It is based on the Linux kernel and HP uses this operating system in its mobile and touch pad devices.
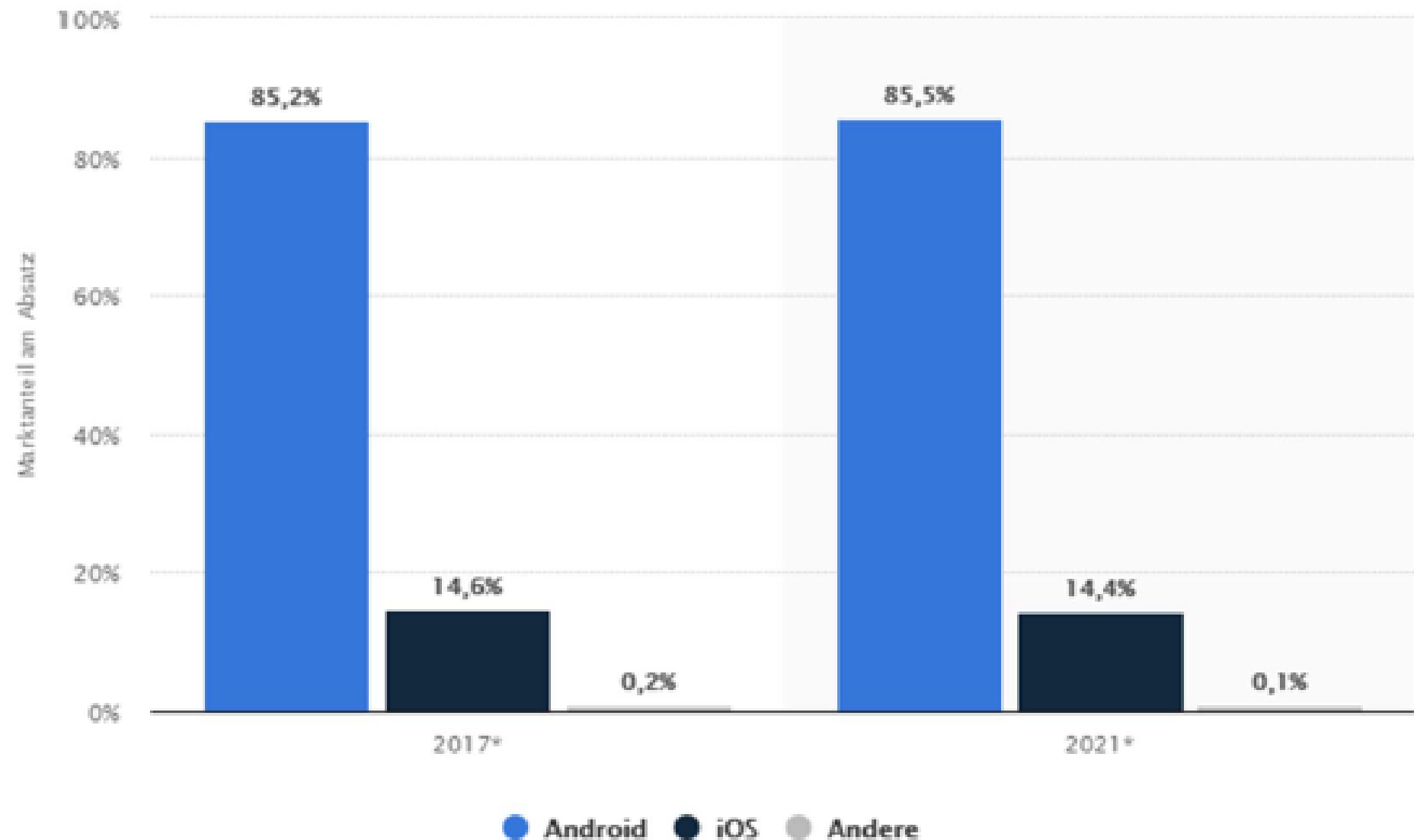
c) Describe mobile operating system

Mobile Operating Systems

palm   ANDROID   BlackBerry   iOS

Windows phone   bada   symbian OS   webOS   HUAWEI HARMONY OS

Worldwide Smartphone Operating System Market (3/3)

The System Architecture in mobile devices

The system architecture involves different layers:

- Application layer
- Application Framework layer
- Libraries
- Android Runtime
- Linux Kernel

APPLICATIONS

Home	Contacts	Phone	Browser	...

APPLICATION FRAMEWORK

Activity Manager	Window Manager	Content Providers	View System	Notification Manager
Package Manager	Telephony Manager	Resource Manager	Location Manager	XMPP Service

LIBRARIES

Surface Manager	Media Framework	SQLite
OpenGL|ES	FreeType	WebKit
SGL	SSL	libc

ANDROID RUNTIME

Core Libraries

Dalvik Virtual Machine

LINUX KERNEL

Display Driver	Camera Driver	Bluetooth Driver	Flash Memory Driver	Binder (IPC) Driver
USB Driver	Keypad Driver	WiFi Driver	Audio Drivers	Power Management

Constraints of mobile devices on developing the Mobile Application

5 key constraints on mobile devices

1. Size of screen
2. Slow network
3. Small cache
4. Low performance