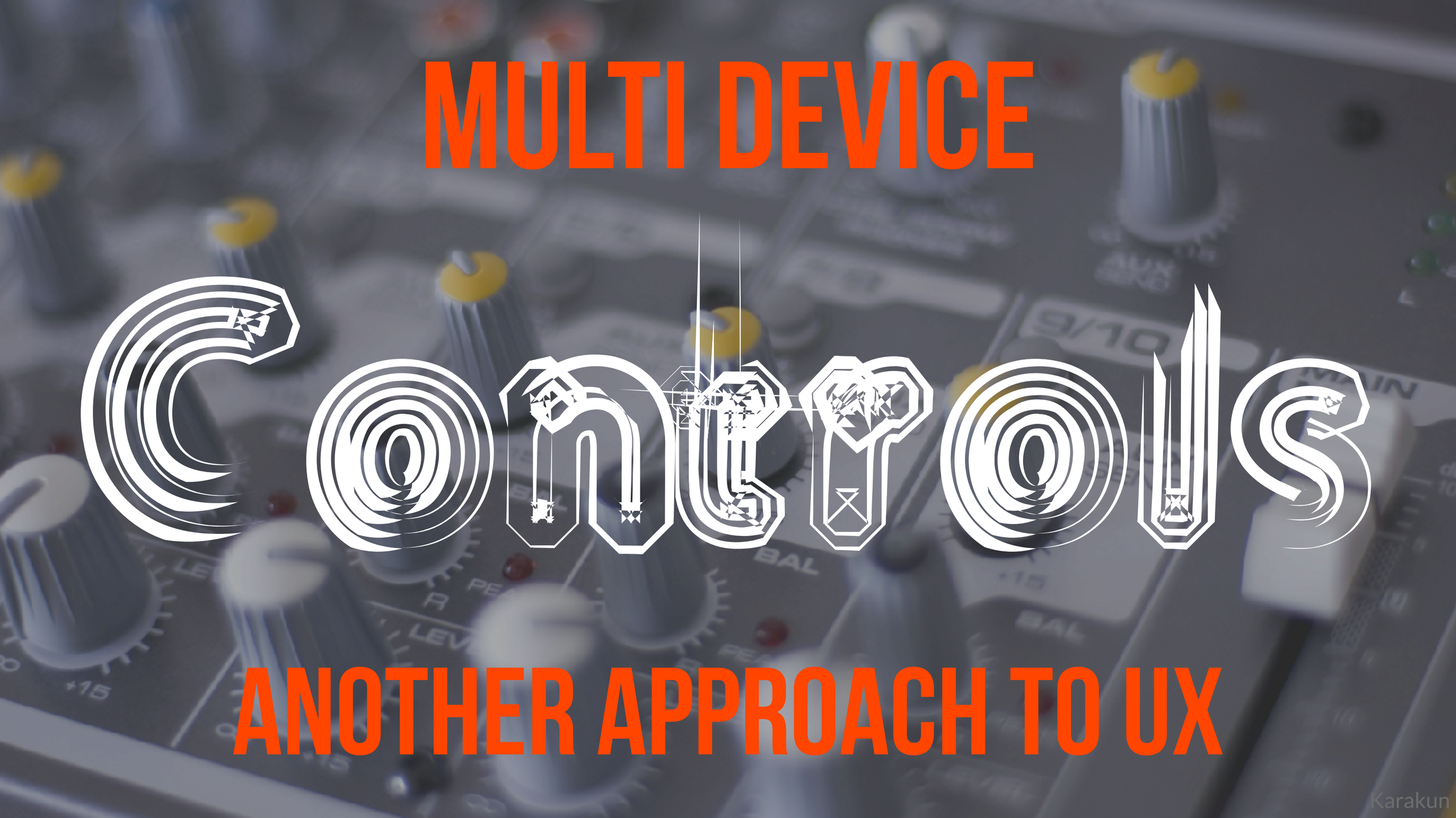
MULTI DEVICE



ANOTHER APPROACH TO UX

ABOUT ME.

Karakun

Gerrit Grunwald | Engineer

Karakun.

n|w University of Applied Sciences and Arts Northwestern Switzerland

Current

SITUATION

Desktop

- BUSINESS APPLICATIONS
- MAINLY FORM BASED
- CONTROLLED BY KEYBOARD AND MOUSE
- STANDARD CONTROLS LIKE TEXTFIELDS, COMBOBOXES, BUTTONS ETC.


OLD & BORING

Mobile

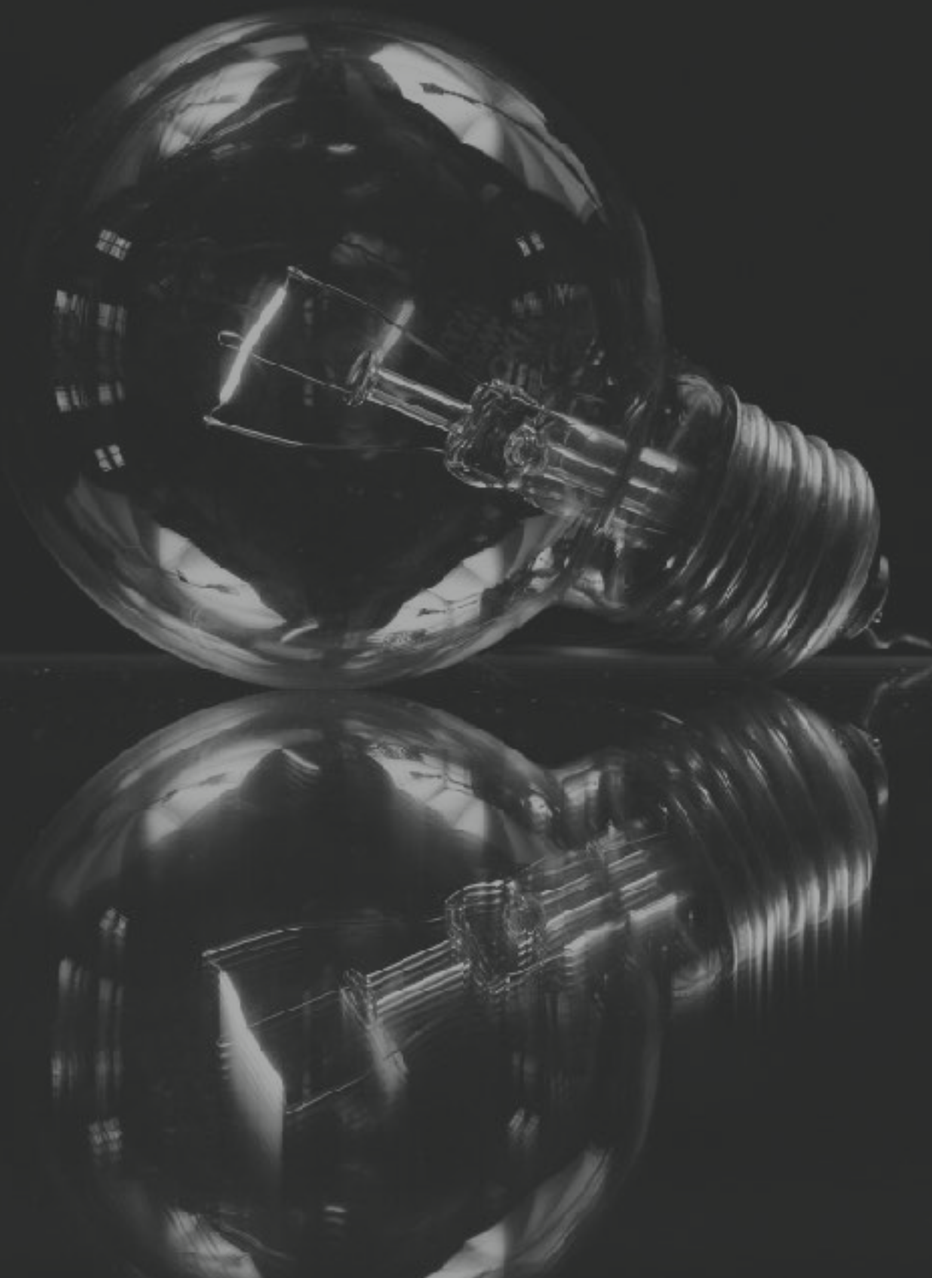
Mobile

- ALL KIND OF APPS
- MULTI TOUCH USER INTERFACE
- VOICE CONTROL
- CAMERA SUPPORT
- DIFFERENT KIND OF CONTROLS THAT MAKE USE OF THE ADDITIONAL FEATURES

Karakun

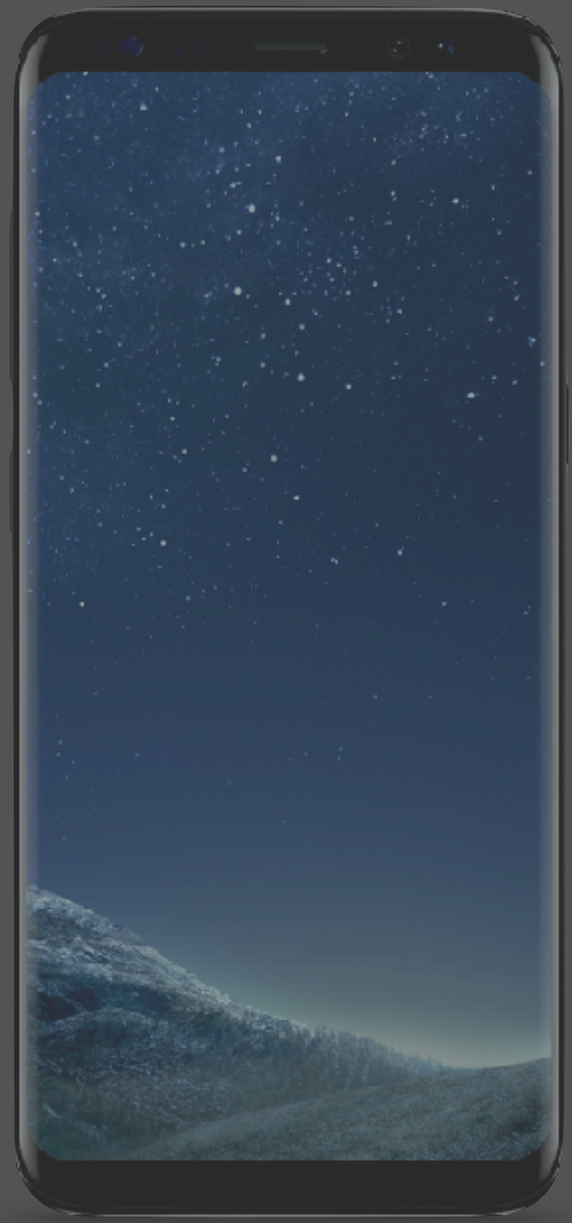
The

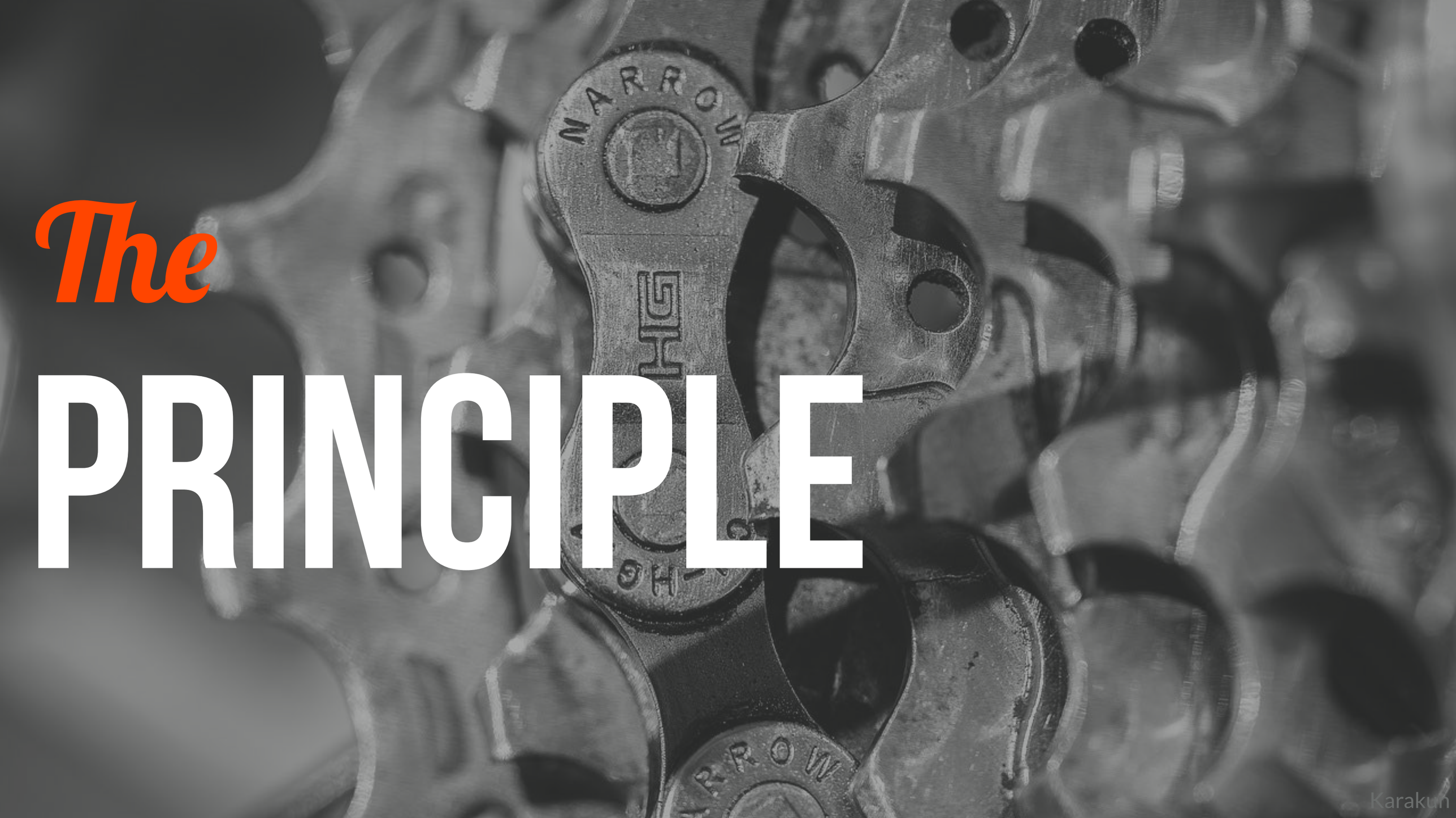
IDEA



Combining the

PLATFORMS





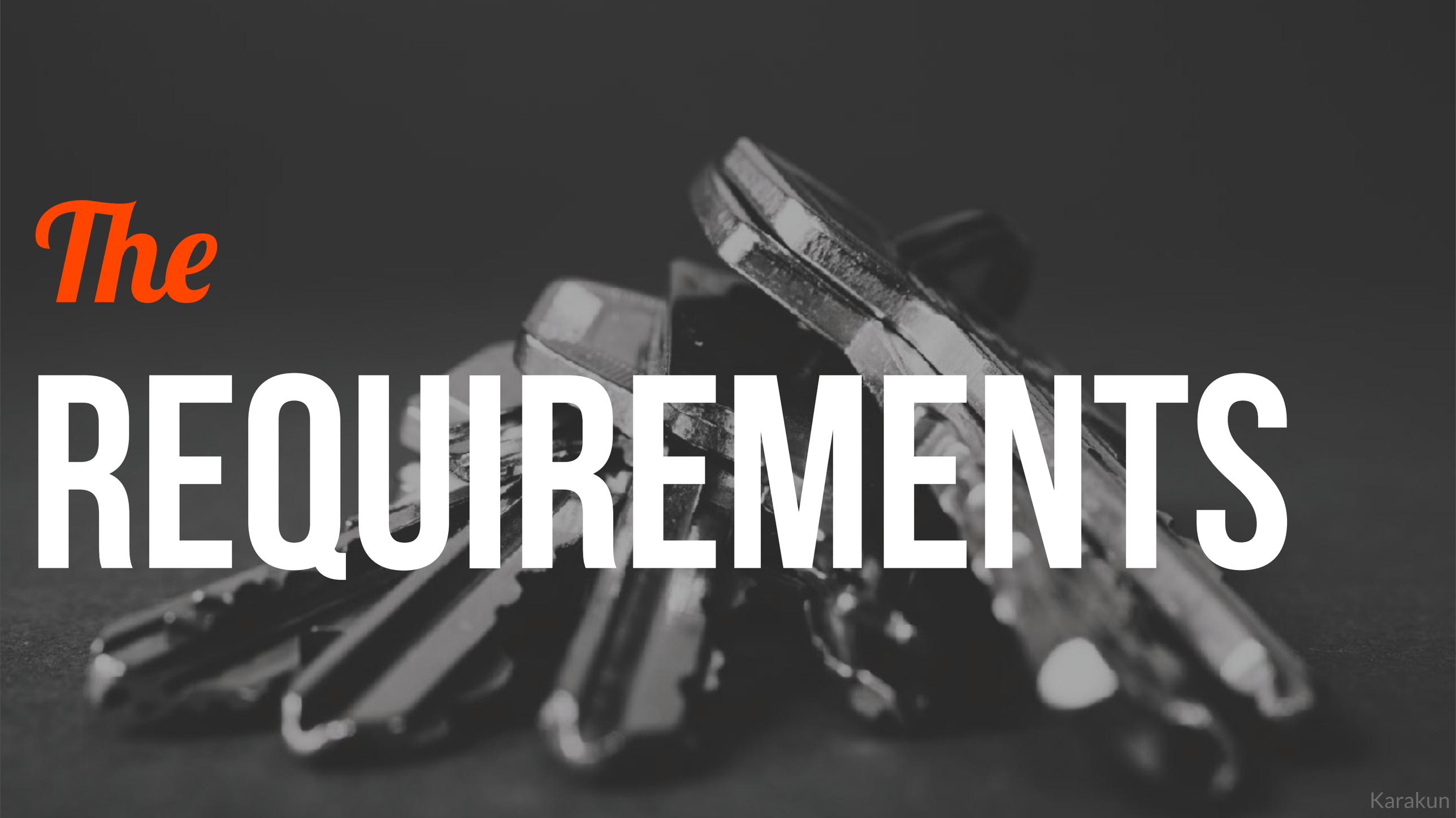
The

PRINCIPLE

Apple Touch Bar

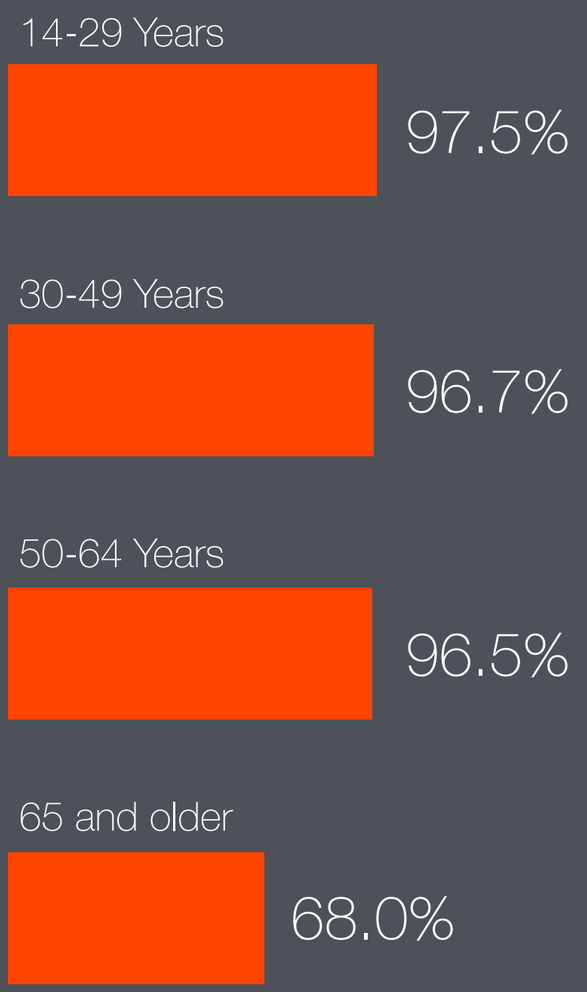
Separate Controls

Separate Controls



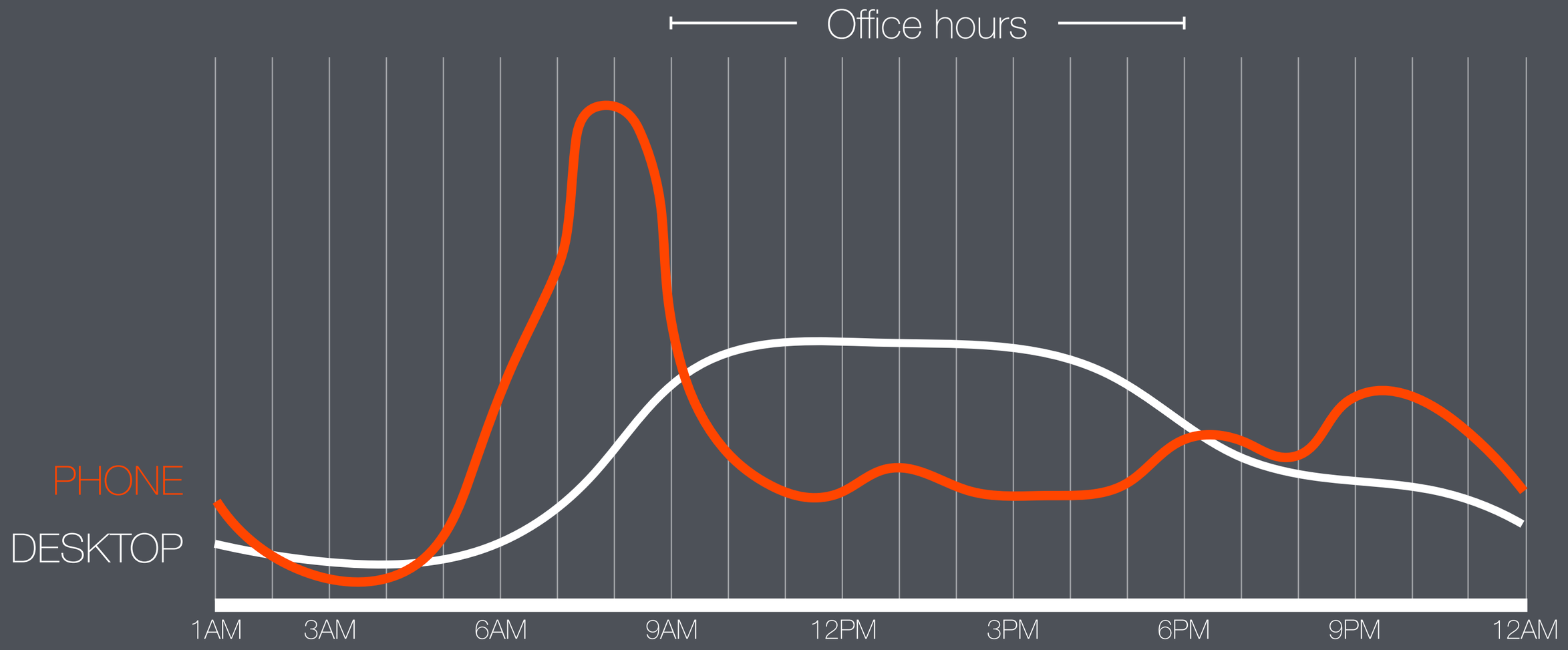
Mobile Availability

(Bitkom, Germany 2013)

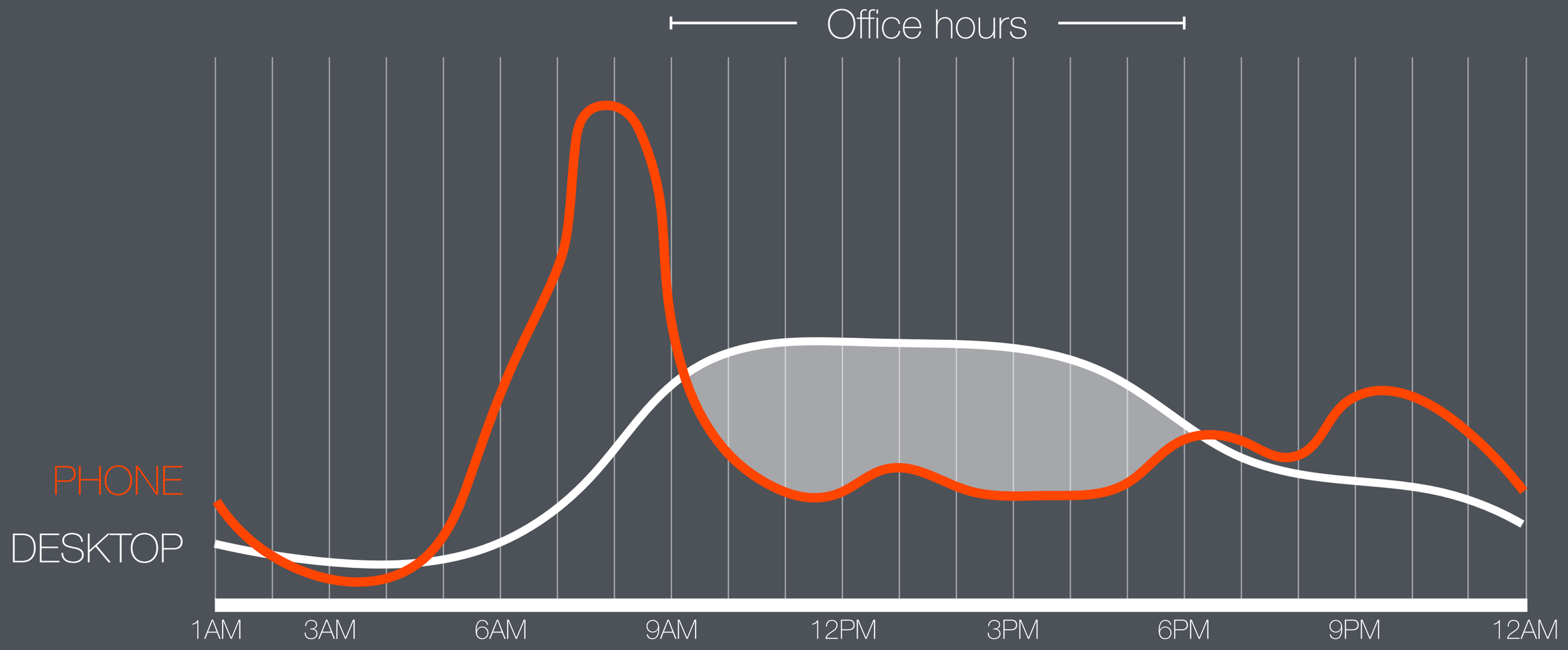


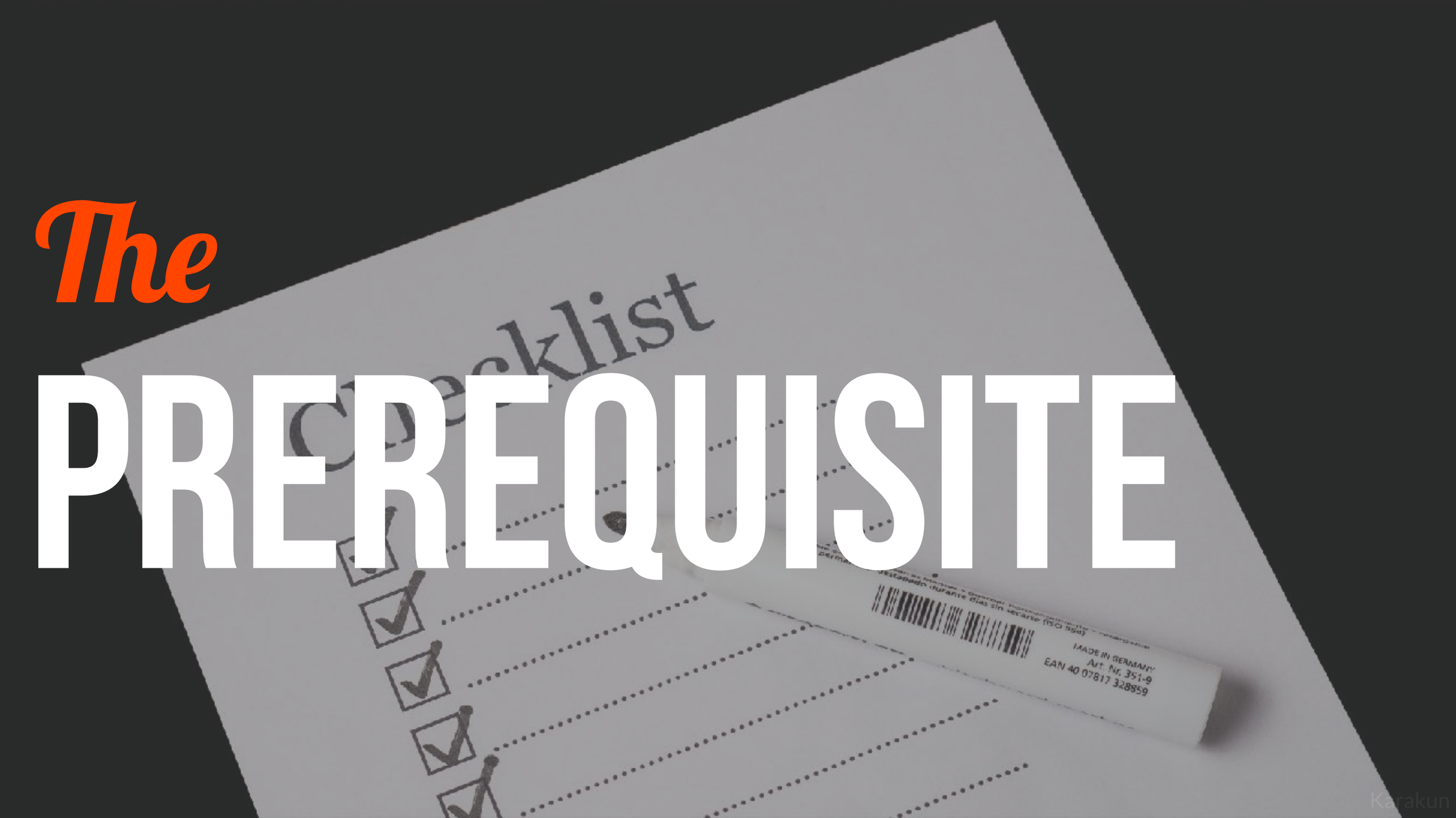
USAGE

24h Usage



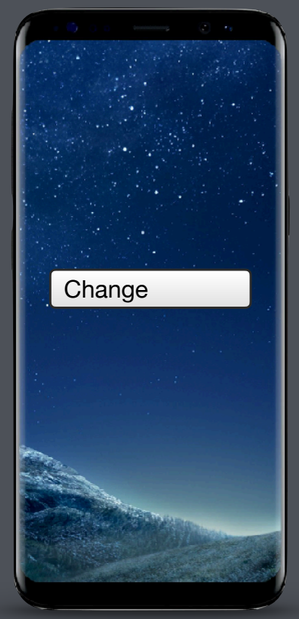
24h Usage




The
PREREQUISITE
Checklist
MADE IN GERMANY
Art. Nr. 351-9
EAN 40 07817 328859

Synchronization

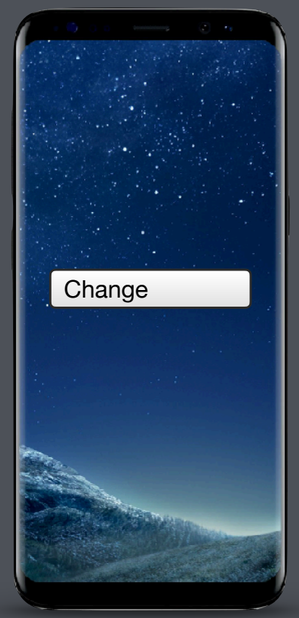
Desktop



Mobile

Synchronization

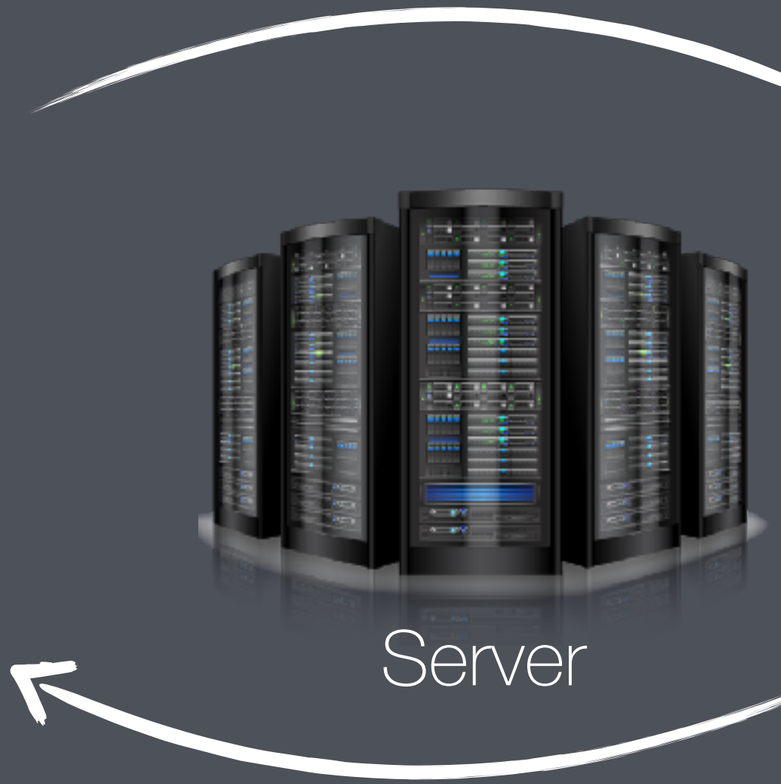
Desktop



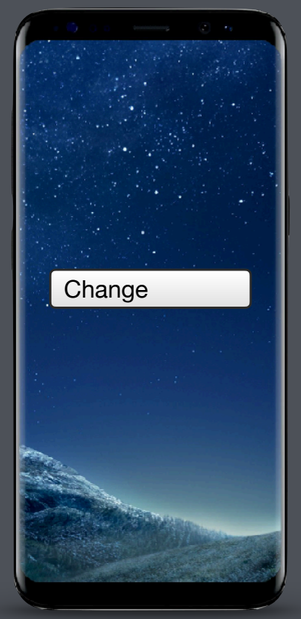
Mobile

Synchronization

Desktop



Server

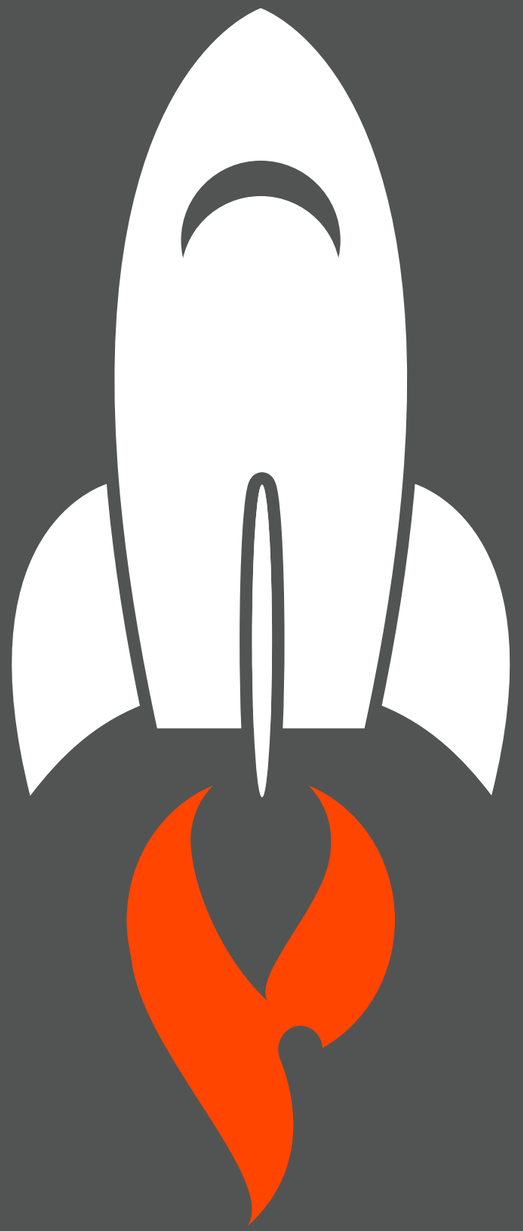


Mobile

1. Version

- STAY ON THE JAVA PLATFORM
- CONTROLS WITH ADDITIONAL FUNCTIONALITY
- USE THE SAME CONTROL ON DESKTOP AND MOBILE
- CONTROLS HAVE DIFFERENT "SKINS" FOR DIFFERENT PLATFORMS

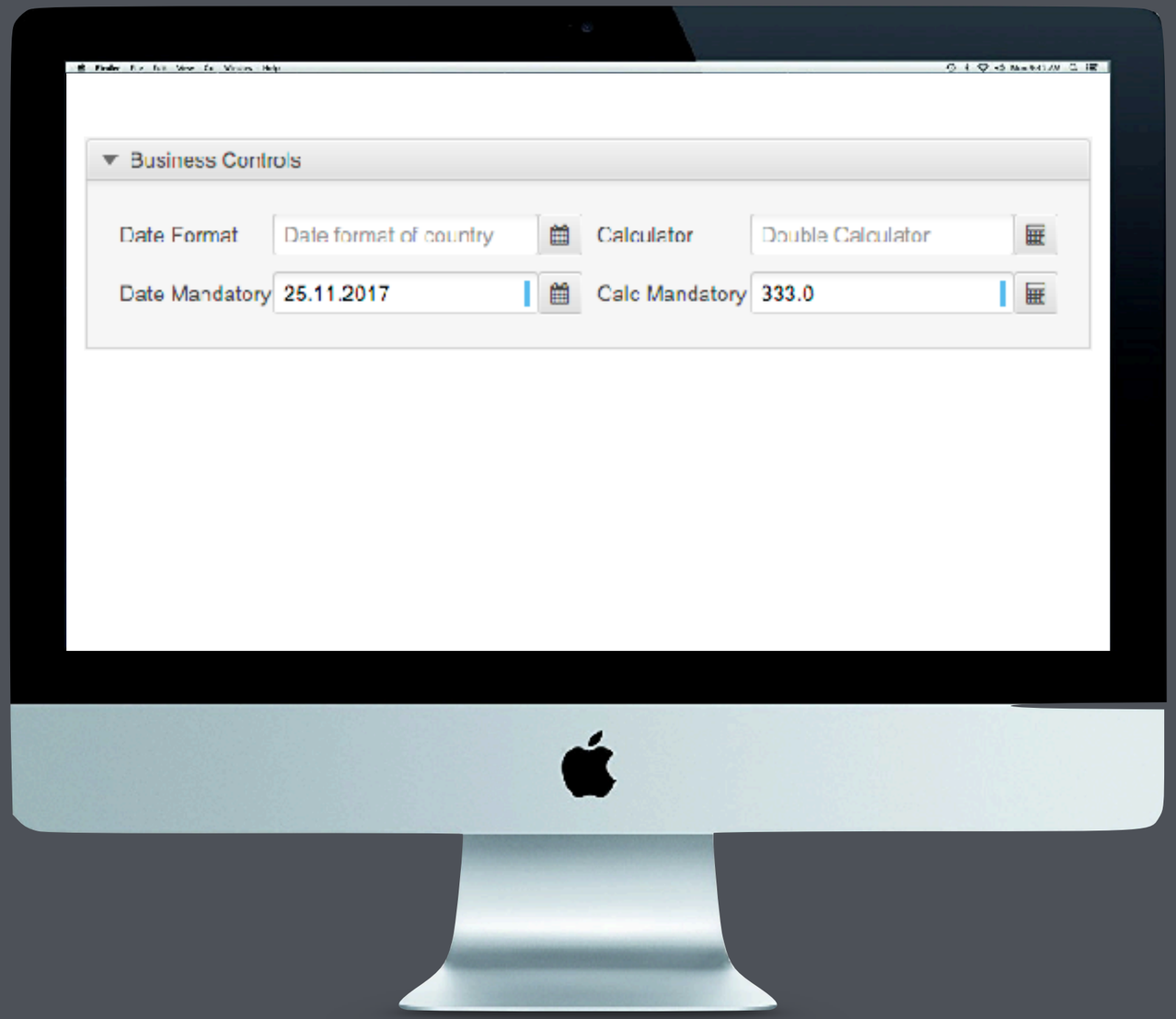
Technology

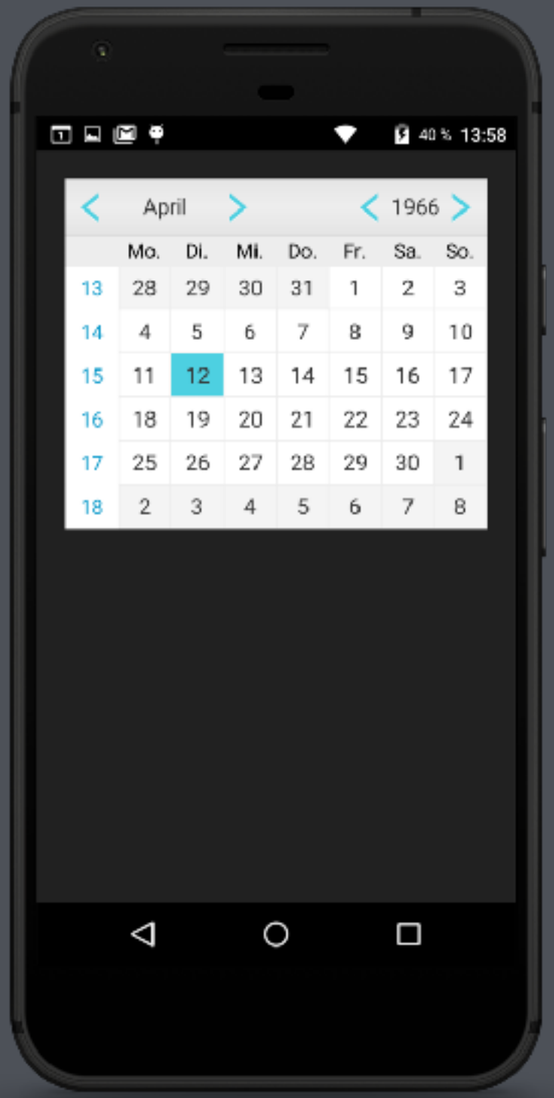


100%

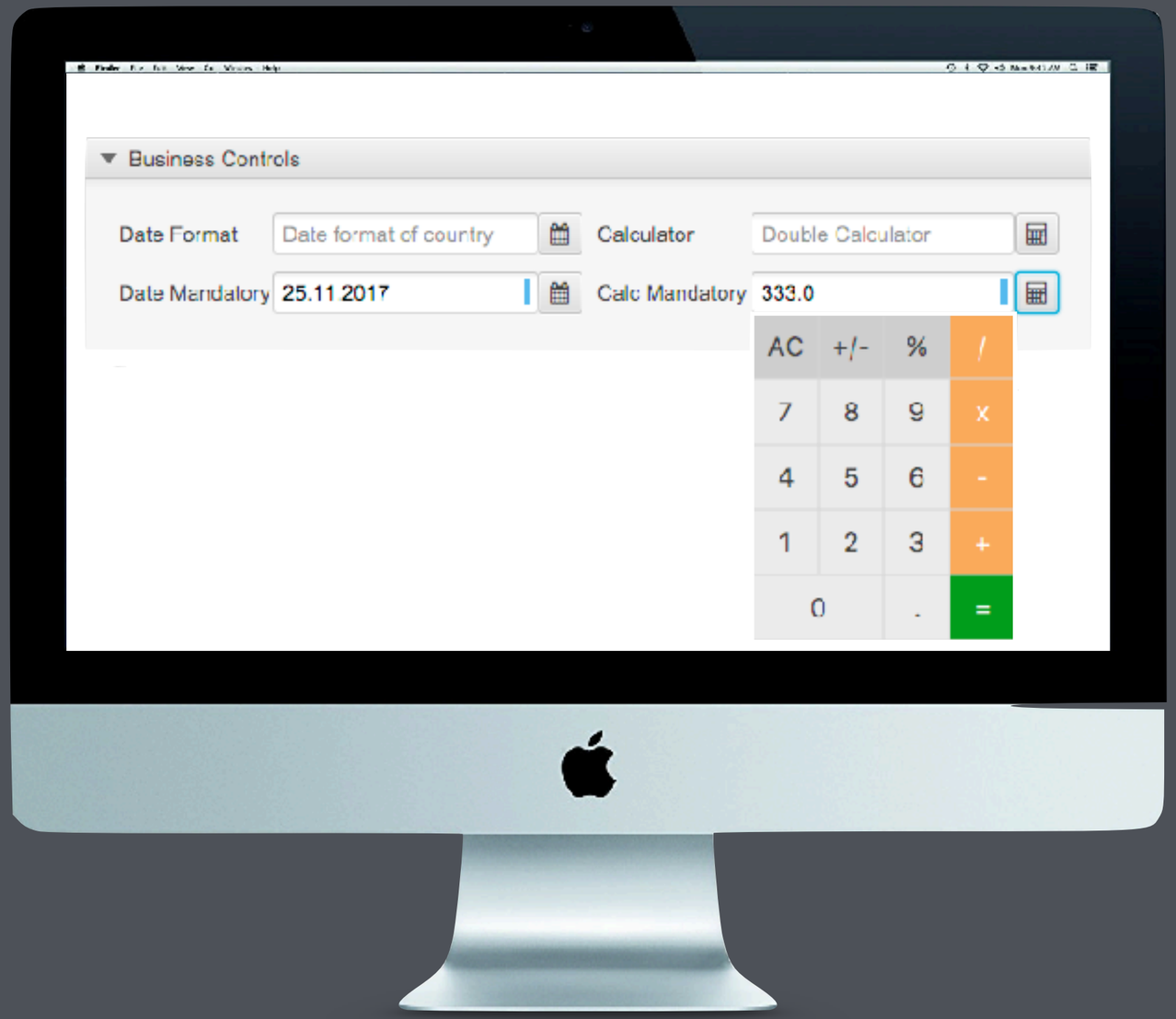
JavaFX

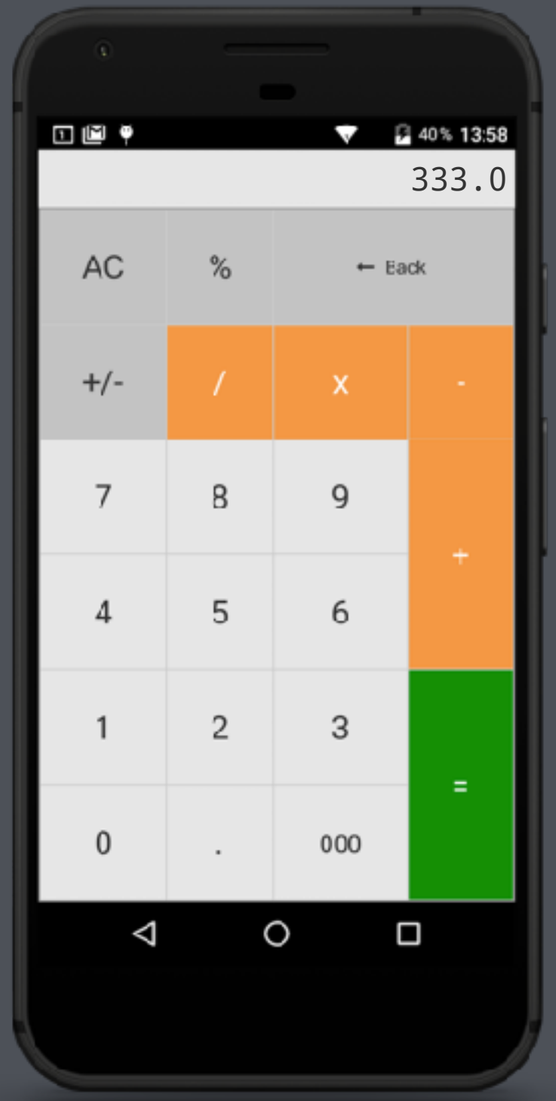
One Control...





One Control...





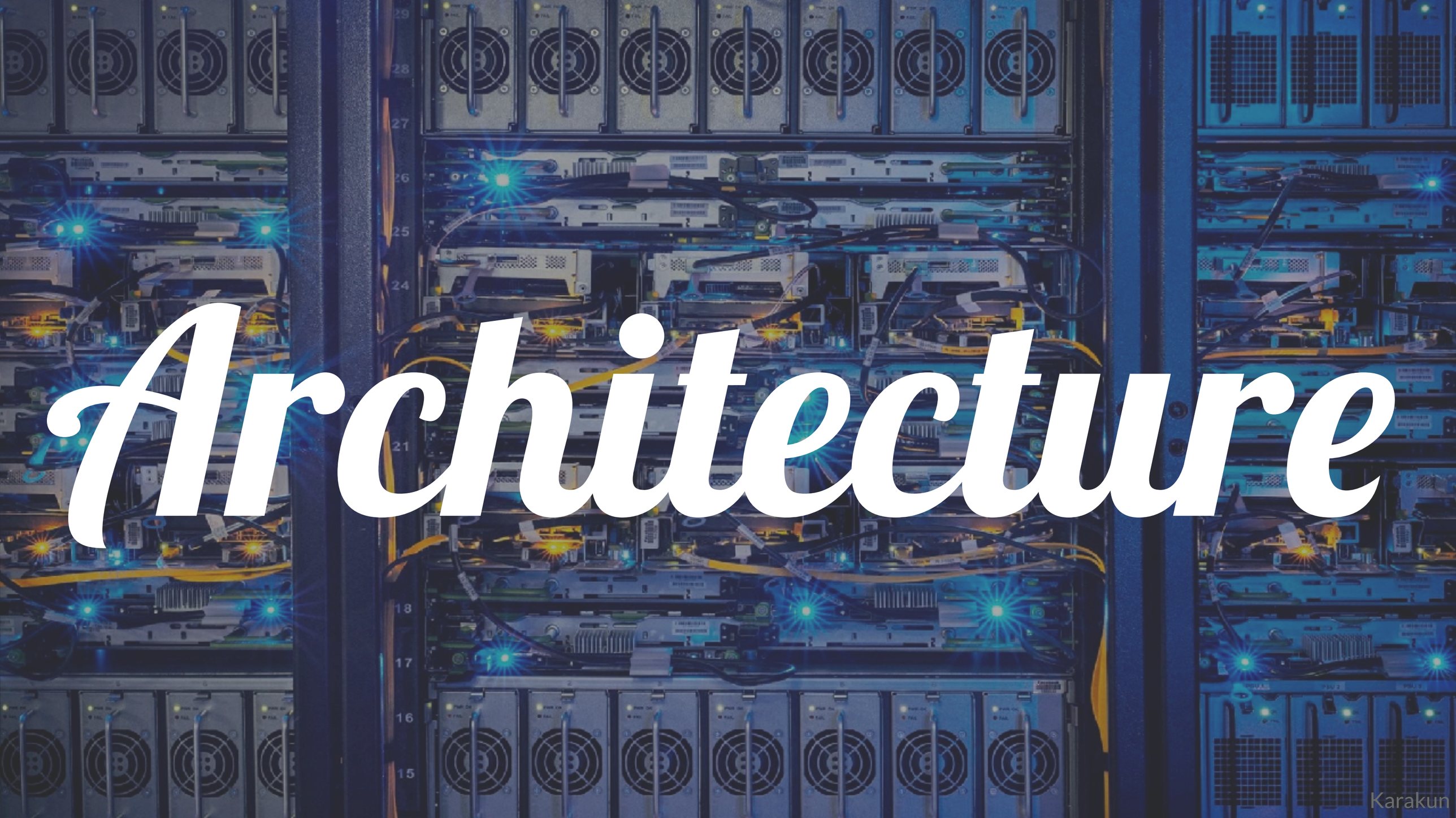
Gluon

MOBILE

Gluon Mobile

- SINGLE APPLICATION
- MULTIPLE PLATFORMS
- JAVA END TO END
- ACCESS HARDWARE BY API
- NATIVE APPS FOR IOS AND ANDROID

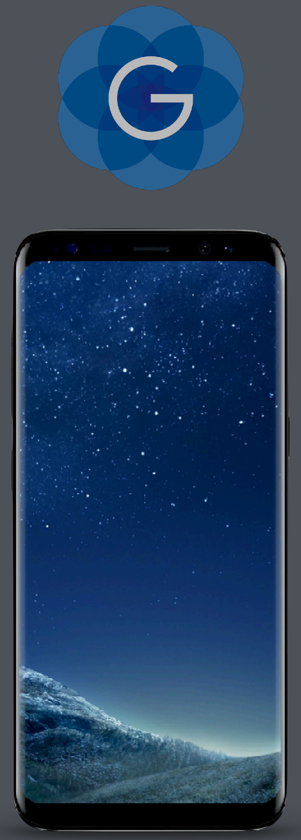
Architecture



Karakun

Architecture

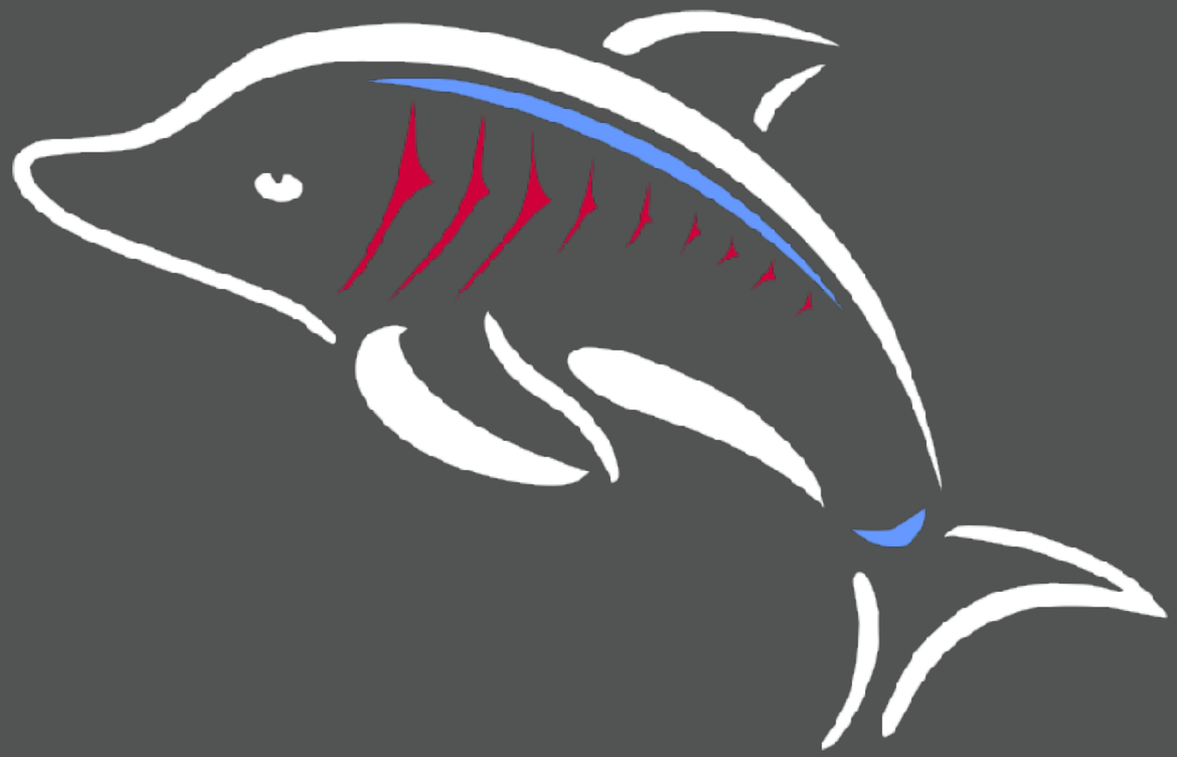
JavaFX



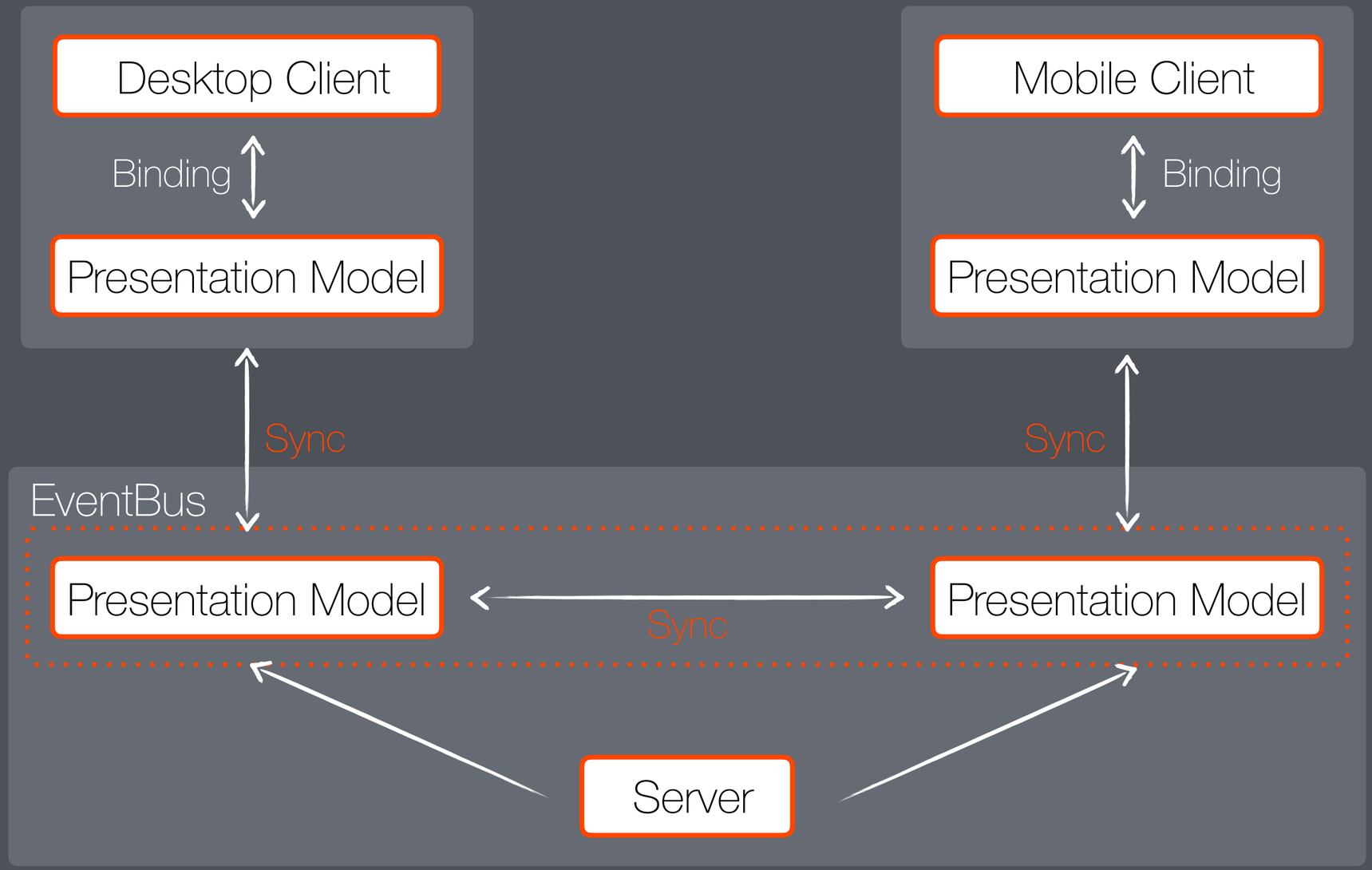
JavaFX

Open

DOLPHIN



Open Dolphin



Open Dolphin

- BIND CONTROLS TO THE PRESENTATION MODEL
- SYNCHRONIZATION IS DONE BY THE SERVER

Demo

PROS & CONS

PROS

- ★ SAME CODE BASE
- ★ EASY TO DEVELOP
- ★ EASY TO TEST
- ★ EASY TO DEPLOY
- ★ ONE CONTROL ON ALL ENVIRONMENTS
- ★ ALL PLAIN JAVA

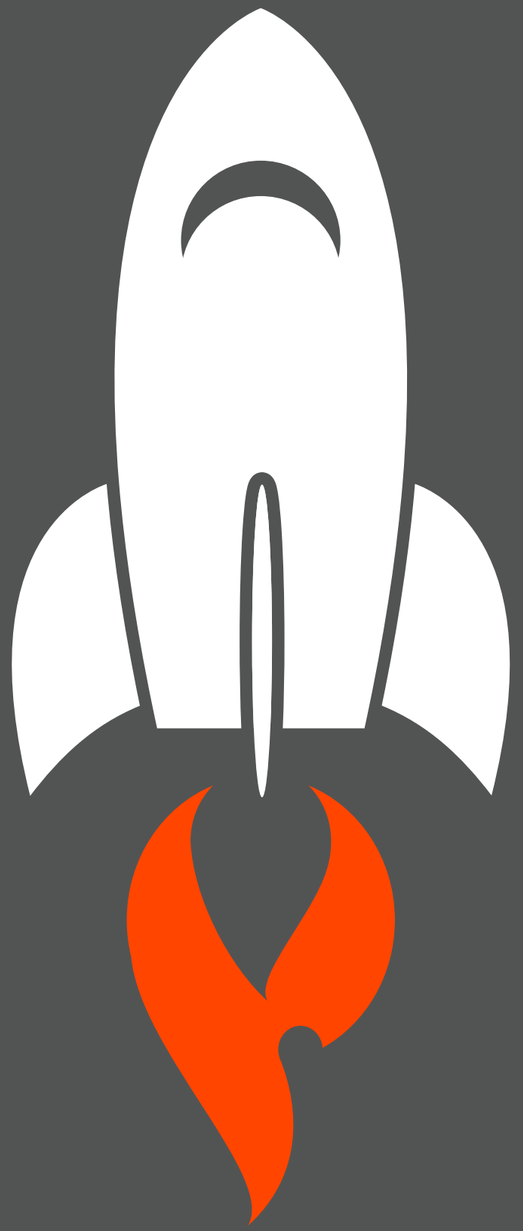
CONS

- ★ OVERHEAD BY OPENDOLPHIN
- ★ PERFORMANCE LOSS
- ★ BOUND TO JAVA ECOSYSTEM

2. Version

- PLATFORM INDEPENDENT
- USE STANDARD CONTROLS ON DESKTOP
- CREATE A MOBILE CONTROL FOR EACH DESKTOP CONTROL

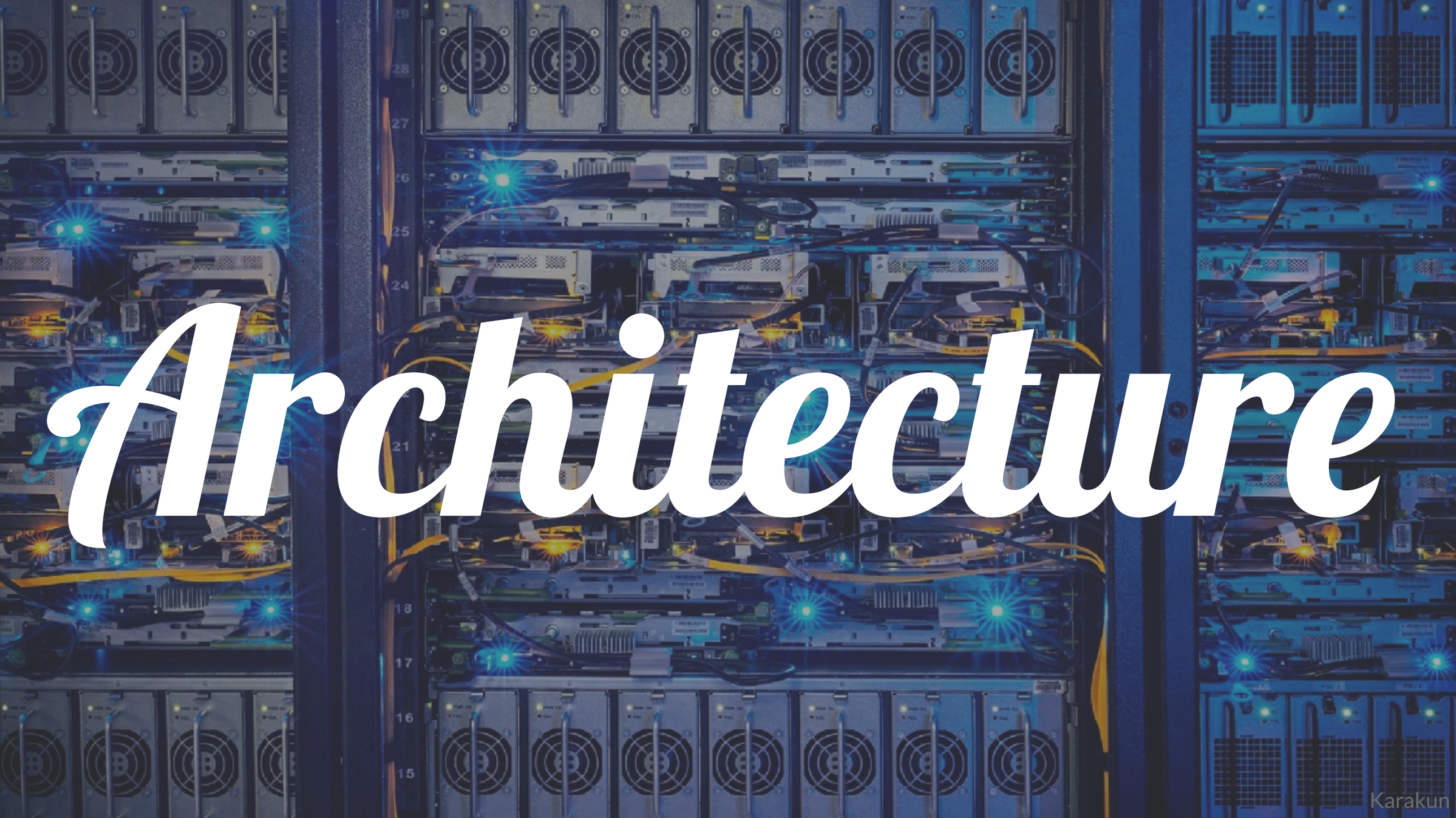
Technology



Swift

Polymer

Architecture



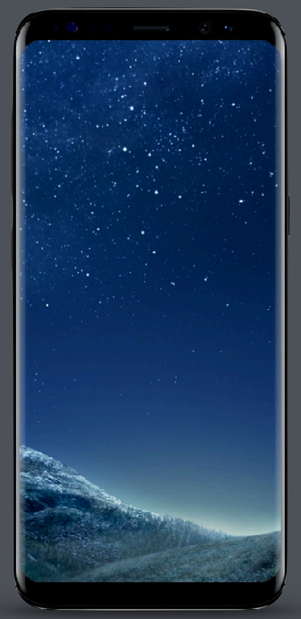
Karakun

Architecture

JavaFX

MQTT

mosquitto

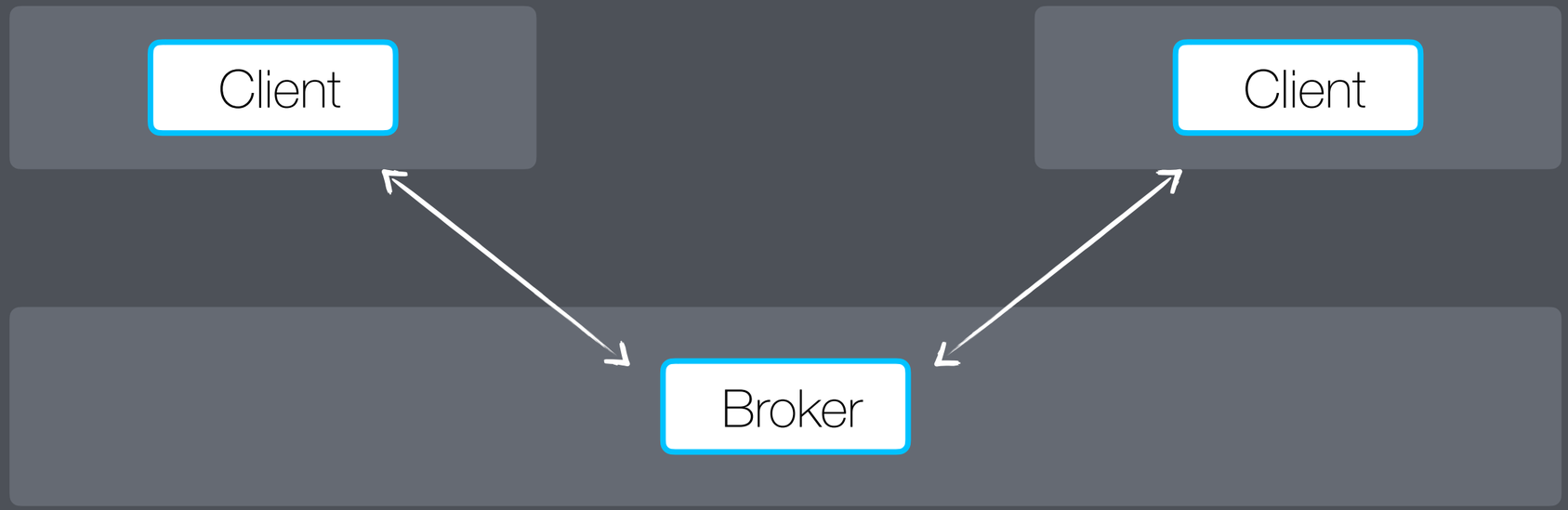


Swift

Using

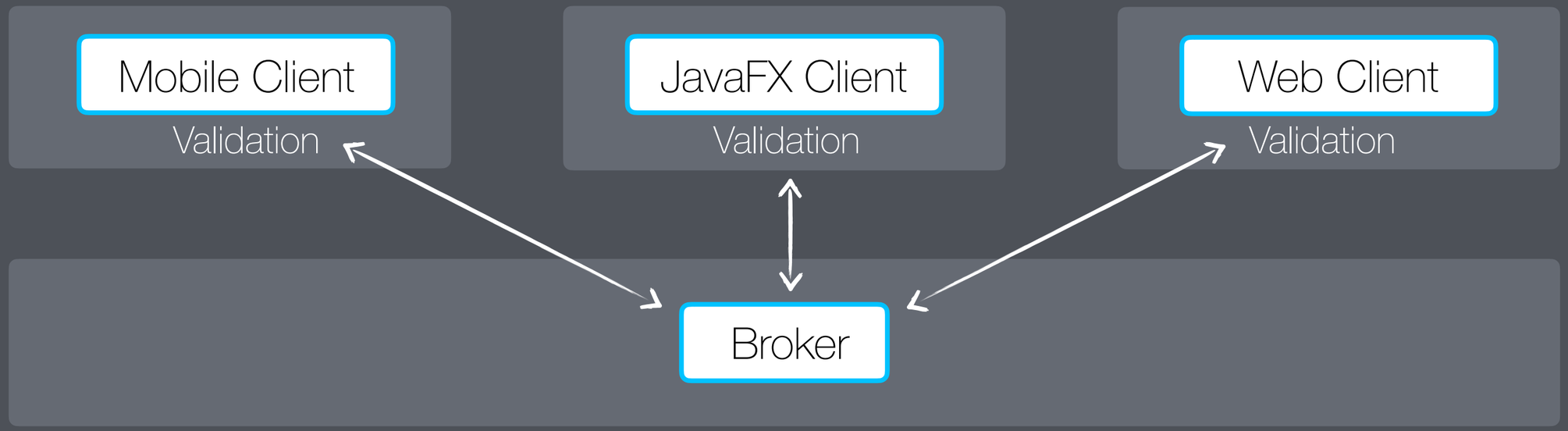
MQTT

Using MQTT



SYNCHRONIZATION HAS TO BE DONE BY OURSELVES

Using MQTT



CLIENT SIDE VALIDATION

Shared CONTENT

Shared content

- CTRL TYPE
- CTRL ID
- NUMBERS (DOUBLE, INTEGER)
- MIN- AND MAX-VALUES
- UNIT
- TEXT

JSON

```
{
  "ctrl"     : "TextField",
  "id"       : "numberField",
  "type"     : "NUMBER",
  "text"     : "",
  "min"      : 0,
  "max"      : 100,
  "value"    : 4,
  "decimals" : 0,
  "unit"     : ""
  "combo"    : ""
}
```

CtrlData


```
private String   ctrl;
private String   id;
private String   type;
private String   text;
private double   min;
private double   max;
private double   value;
private int      decimals;
private String   unit;
private String[] combo;


public CtrlData() {
    this("", "", "", "", 0, 100, 0, 1, "", new String[]{});
}
public CtrlData(String ctrl, String id, String type, String text, double min, double
max, double value, int decimals, String unit, String[] combo) {…}

public String toJSONString() {…}
```

CtrlData

```
constructor() {
    this._id        = "";
    this._type      = "";
    this._text      = "";
    this._min       = 0;
    this._max       = 100;
    this._value     = 0;
    this._decimals  = 1;
    this._unit      = "";
    this._combo     = [];
}

toJSON() {…}
```

Types...

Types...

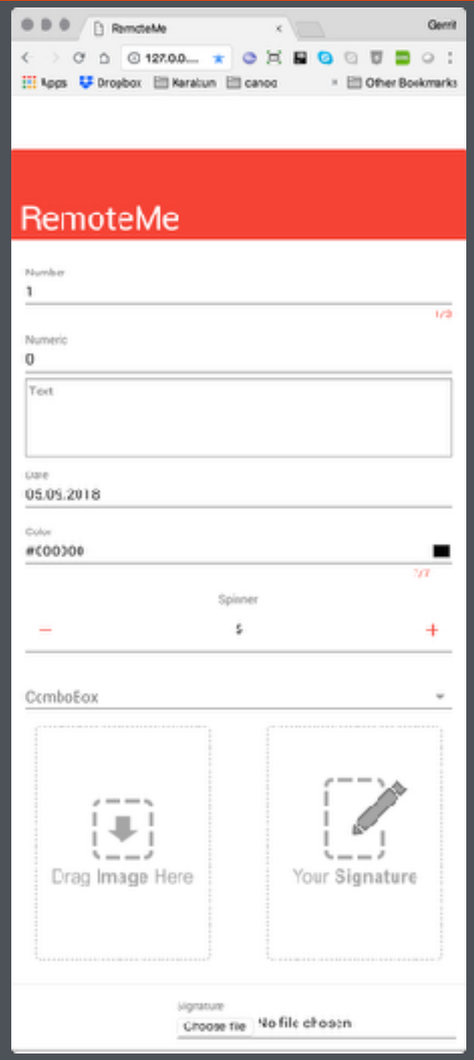
- TEXT
- NUMBER
- NUMERIC
- DATE
- COLOR
- COMBO
- SIGNATURE
- IMAGE

Types of Controls


```
public enum Type {
    // Types of Controls
    UNKNOWN,
    TEXT,
    NUMBER,
    NUMERIC,
    DATE,
    COLOR,
    COMBO,
    SIGNATURE,
    IMAGE,
    // Commands
    EXIT,
    NEXT,
    PREVIOUS,
    REQUEST
}
```

The App...

The App...



JavaFx

JPRO

Polymer

Controls...

Controls...

- TEXTFIELD (NUMBER, NUMERIC, DATE, COLOR)
- SPINNER
- TEXTAREA
- COMBOBOX
- IMAGEVIEW (PHOTO, SIGNATURE)

Examples...

NumberField

NumberField

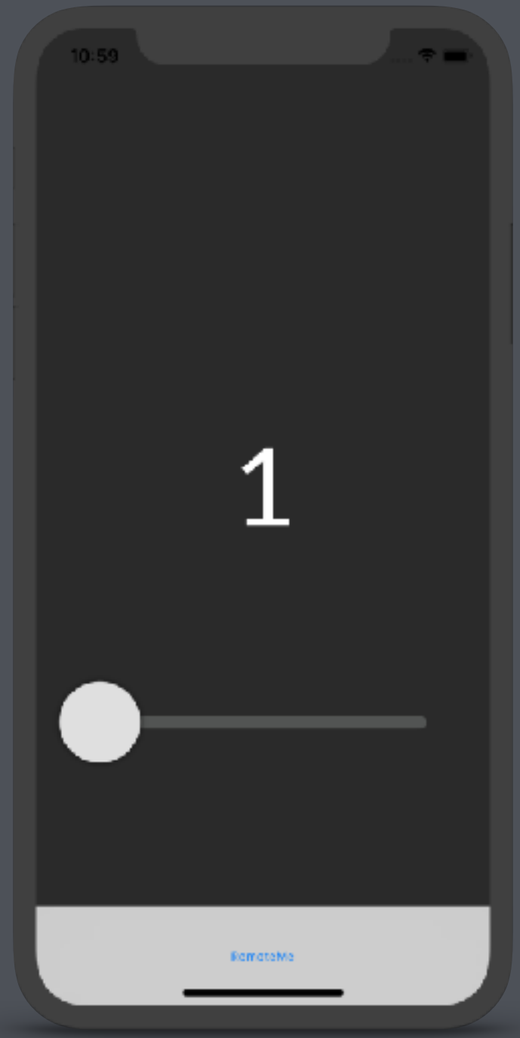
JavaFX

Number 1

Polymer

Number
1

Swift



Numeric Field

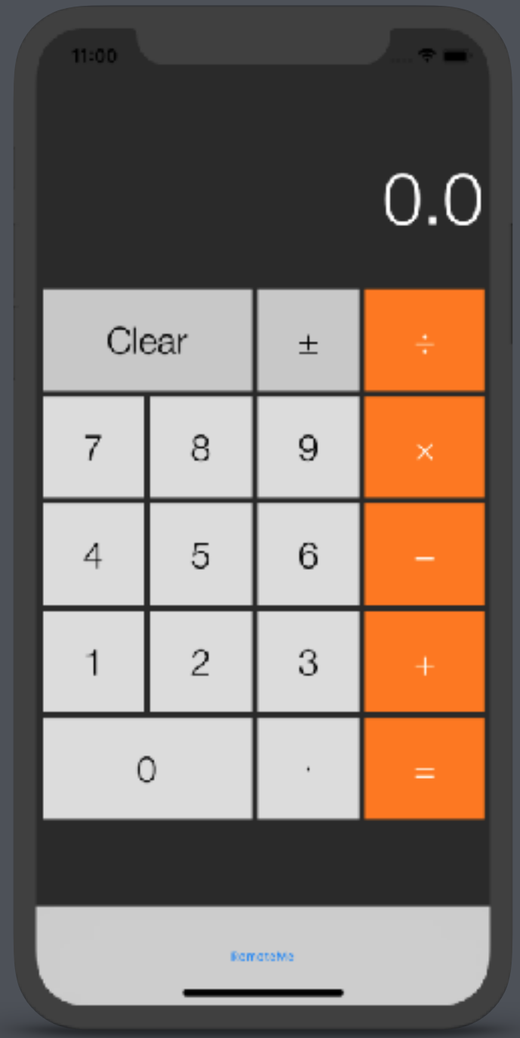
NumericField

JavaFX

Numeric 0

Polymer

Numeric
0



Swift

Karakun

Date Field

DateField

JavaFX

Date 08.04.2018

Polymer

Date
08.04.2018

Color Field

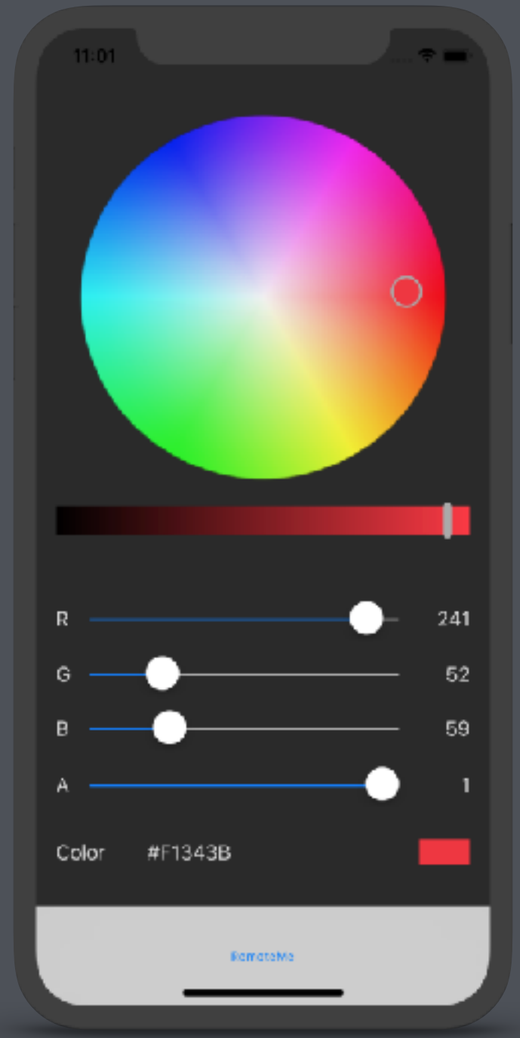
ColorField

JavaFX

Color #F1343B

Polymer

Color
#F1343B

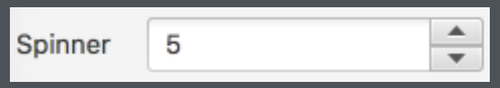


Swift

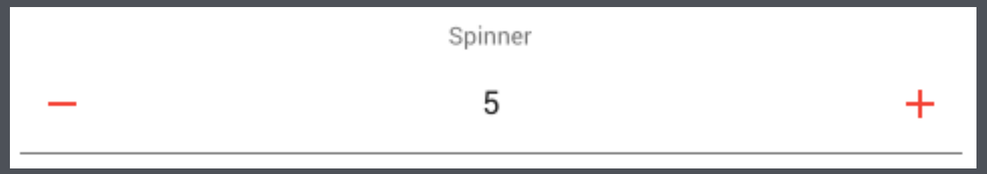
Spinner

Spinner

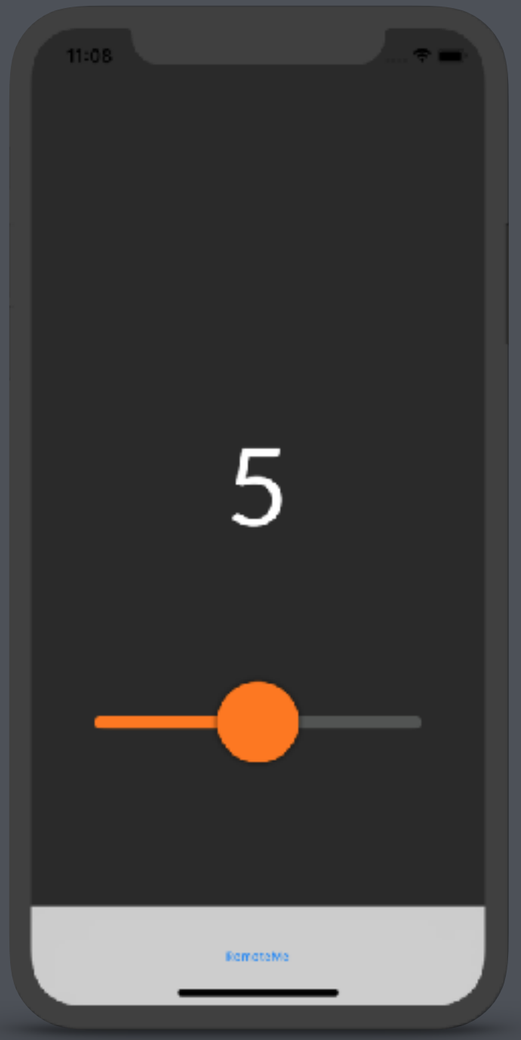
JavaFX



Polymer



Swift



TextArea

TextArea

JavaFX

Text

Polymer

Text

Swift

ComboBox

ComboBox

JavaFX

ComboBox Germany

Polymer

ComboBox

Swift

Photo

Photo

JavaFX

Polymer

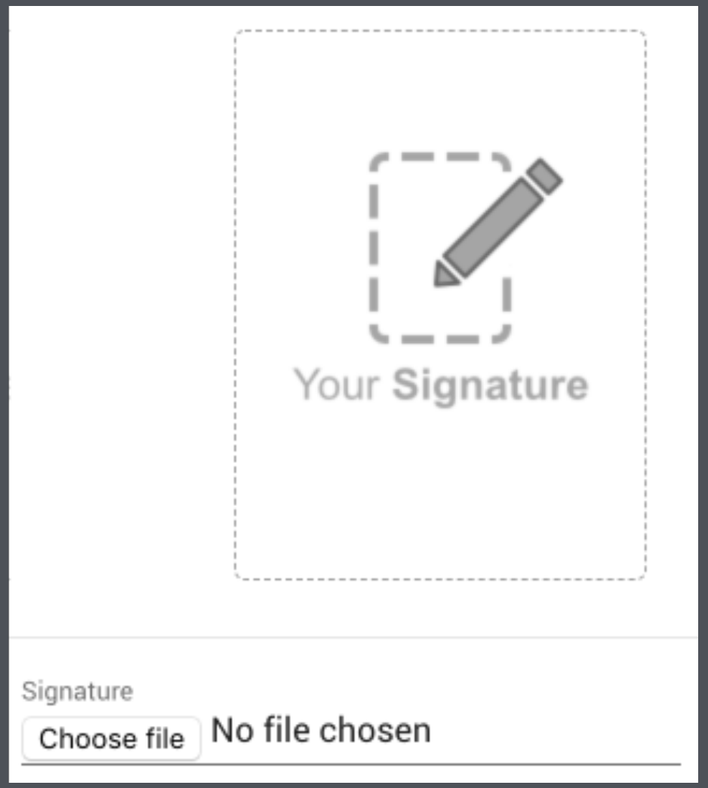
Swift

Signature

Signature

JavaFX

Polymer



Swift

Karakun

The Flow

Polymer

Field gains focus

The Flow

Polymer

Field gains focus

```
{
   "ctrl"     : "TextField",
   "id"       : "numberField",
   "type"     : "NUMBER",
   "text"     : "",
   "min"      : 0,
   "max"      : 100,
   "value"    : 1,
   "decimals" : 0,
   "unit"     : "",
   "combo"    : ""
}
```

Generate JSON

The Flow

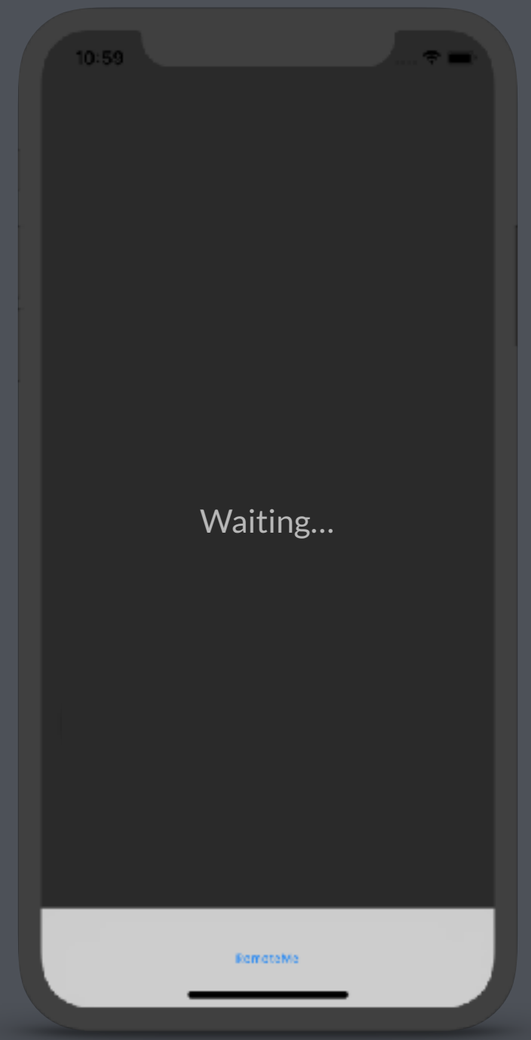
Polymer


```
{
   "ctrl"     : "TextField",
   "id"       : "numberField",
   "type"     : "NUMBER",
   "text"     : "",
   "min"      : 0,
   "max"      : 100,
   "value"    : 1,
   "decimals" : 0,
   "unit"     : "",
   "combo"    : ""
}
```

mosquitto

Generate JSON

Send to Device via MQTT



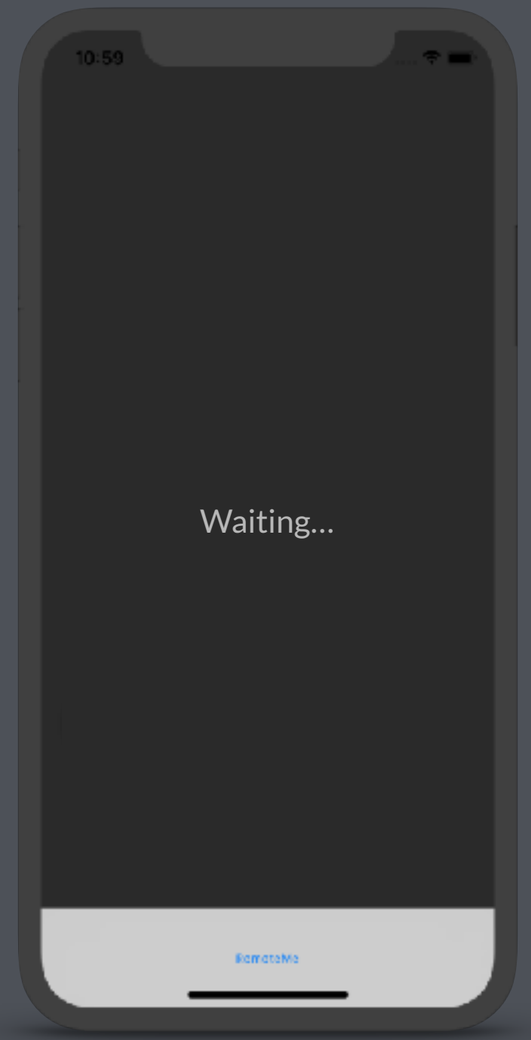
The Flow

Polymer


```
{
   "ctrl"     : "TextField",
   "id"       : "numberField",
   "type"     : "NUMBER",
   "text"     : "",
   "min"      : 0,
   "max"      : 100,
   "value"    : 1,
   "decimals" : 0,
   "unit"     : "",
   "combo"    : ""
}
```

mosquitto

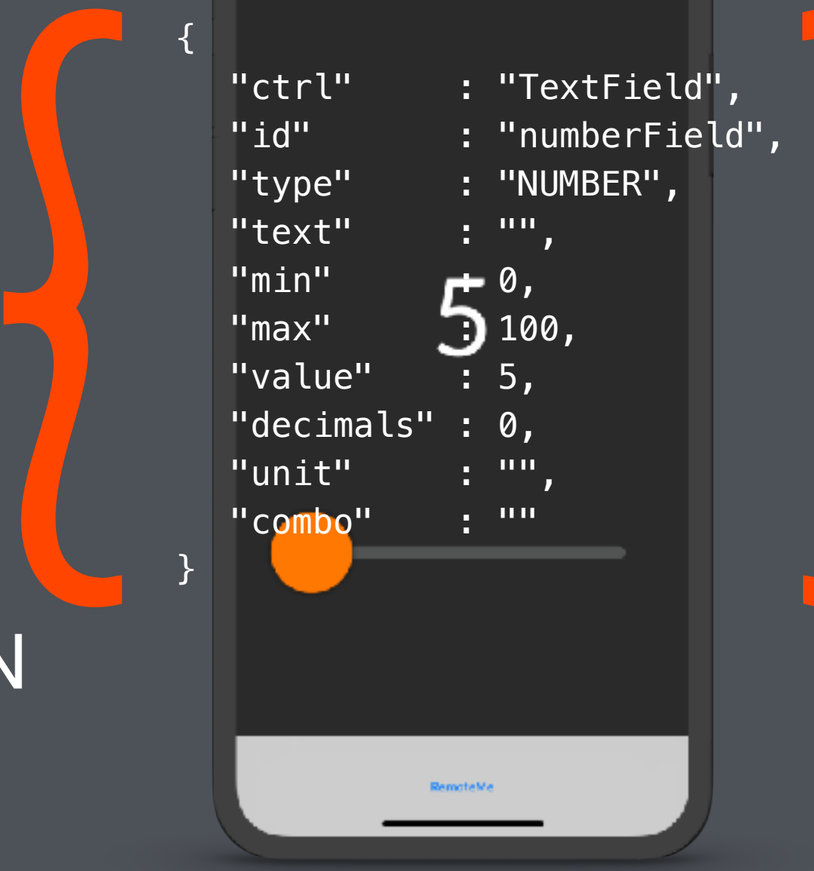
Send to Device
via MQTT



The Flow

Polymer

mosquitto



Generate JSON and send to Desktop

The Flow

Polymer

file.io

upload image

The Flow

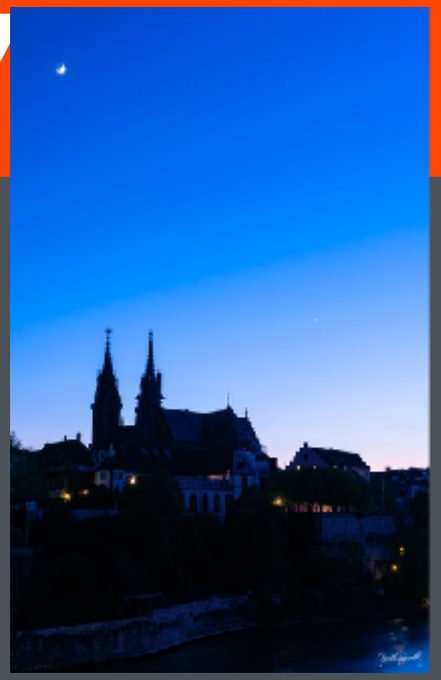
Polymer

file.io

upload image

The Flow

Polymer



mosquitto


```
{
"ctrl"     : "ImageView",
"id"       : "photo",
"type"     : "NUMBER",
"text"     : "<URL>",
"min"      : 0,
"max"      : 100,
"value"    : 5,
"decimals" : 0,
"unit"     : "",
"combo"    : ""
}
```

Karakun

Demo

PROS & CONS

PROS

- ★ ECOSYSTEM IN
- ★ BETTER PERFO
- ★ EASY TO DEPL
- ★ ONE MOBILE C
  DIFFERENT DE
  PLATFORMS

CONS

E
GE NEEDED
CH
ND
ANDROID CLIENT

General cons:
Bad connection -> bad ux

100 ms -> instantaneously
200 ms -> dogged (esp. for coders)
1000 ms -> limit for user's flow of thought to stay uninterrupted
10000 ms -> limit to keep user focused on dialog

Thank u