

Shapr3D - How we build our app startup?

Brainstorm. Model. 3D print.
From anywhere you want.



Work in real time with colleagues. Use FaceTime to bounce ideas around while sketching up concepts with Apple Pencil.



Model your idea. The A9X chip gives you the power to create 3D models in a way that's remarkably responsive and fluid — on a device that weighs under a pound.





Swift 😂

Objective-C 😐

C++11 😡

OpenCASCADE 😓😄 (C++1989)

++(C++)

- ARC like memory management with smart pointers

```
template <typename T>
using SPtr = std::shared_ptr<T>;
```

```
template <typename T>
using WPtr = std::weak_ptr<T>;
```

```
template <typename T>
using UPtr = std::unique_ptr<T>;
```

```
class SketchController : public std::enable_shared_from_this<SketchController> //😱OH NO!!
{
    //...
    map<SPtr<ConstraintCurveInSketch>, Sketch> _curves;
    SPtr<ConstraintsController> _constraintsController;
    list<SPtr<Shape>> _previewShapes;

    static SPtr<SketchController> MakeSketchController(gp_Pln plane,
                                                         SPtr<WorkspaceController> workspaceController);
}
```

++(C++)

- Immutability über alles
- Introduction of optionals in C++

```
class Arc : public Curve
{
    public:

        static SPtr<Arc> MakeArc(SPtr<ConstraintPoint> start,
                                SPtr<ConstraintPoint> mid,
                                SPtr<ConstraintPoint> end);

        const SPtr<CurvePoint>& GetMidPoint() const;
        virtual const SPtr<CurvePoint>& GetStartPoint() const override;
        virtual const SPtr<CurvePoint>& GetEndPoint() const override;
        virtual SPVector2d TangentAtStart() const override;
        virtual SPVector2d TangentAtEnd() const override;
        virtual const std::list<SPtr<CurvePoint>> GetPoints() const override;

        double Radius() const;
        optional<SPPoint2d> Center() const;
    private:

        Arc(SPtr<ConstraintPoint> start, SPtr<ConstraintPoint> mid, SPtr<ConstraintPoint> end);

        const SPtr<CurvePoint> _startPoint;
        const SPtr<CurvePoint> _midPoint;
        const SPtr<CurvePoint> _endPoint;
};
```


++(C++)

- Null is not never used as an error flag! Optionals for pointer types! Yay!

```
class CopyOperationImpl : public CopyOperation
{
public:
    virtual optional<SPtr<Shape>> CopiedShape() override;
}
```

- Optionals are even bridged from C++ to Swift:

```
#define OptionalType(TypeName) \
typedef struct optional_##TypeName { \
    int hasValue;\
    TypeName value;\
} optional_##TypeName;
```

- No implementation inheritance! 🍷
- Lots of functional style goodies ❤️

The UI

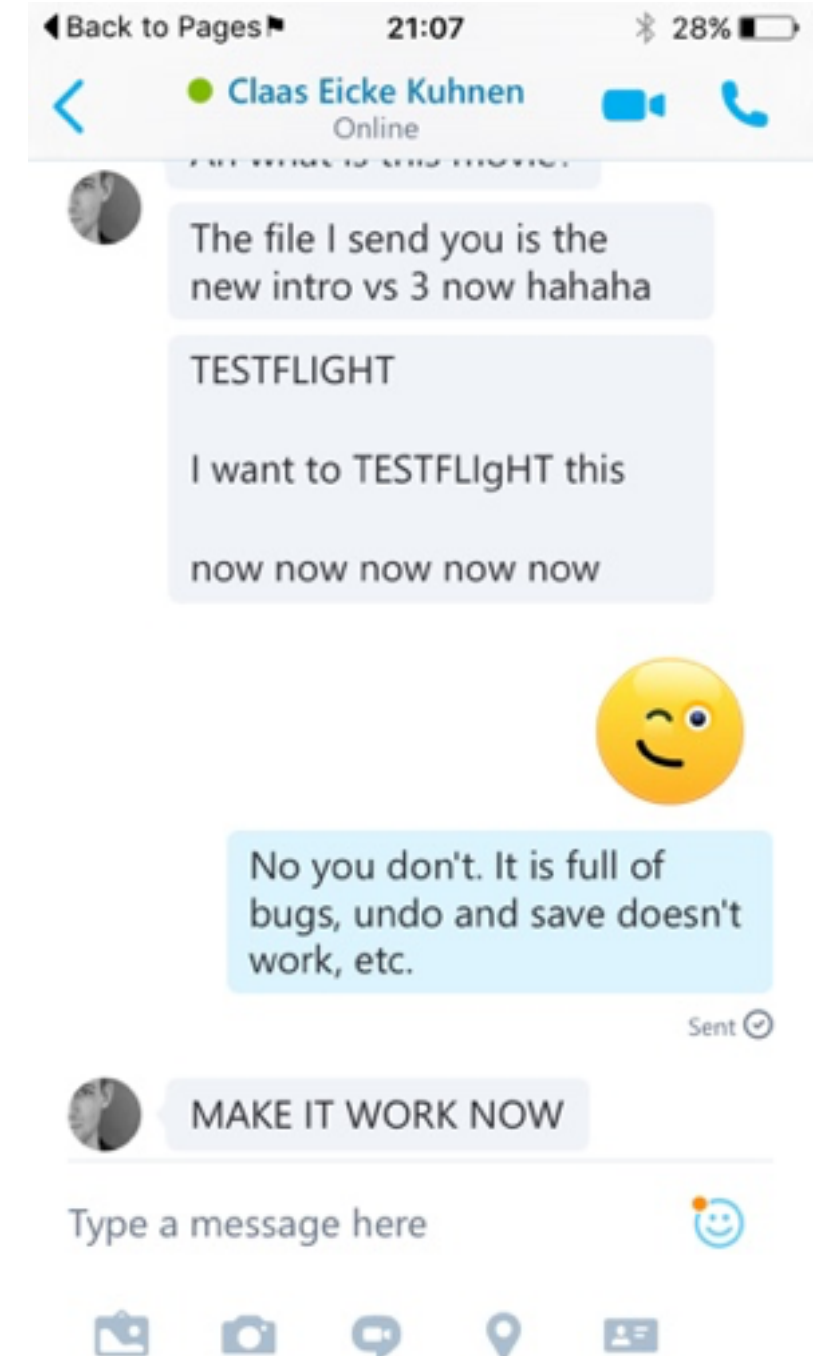


- 100% autolayout
- 100% native
- Deployment target: 9.1 🙌
- 3D render: ultra optimized OpenGL

+ a little Objective-C

Testing



- Unit tests in C++, ~80% code coverage
- Automated UI tests *sometimes work* 😓
- **Very** enthusiastic beta testers



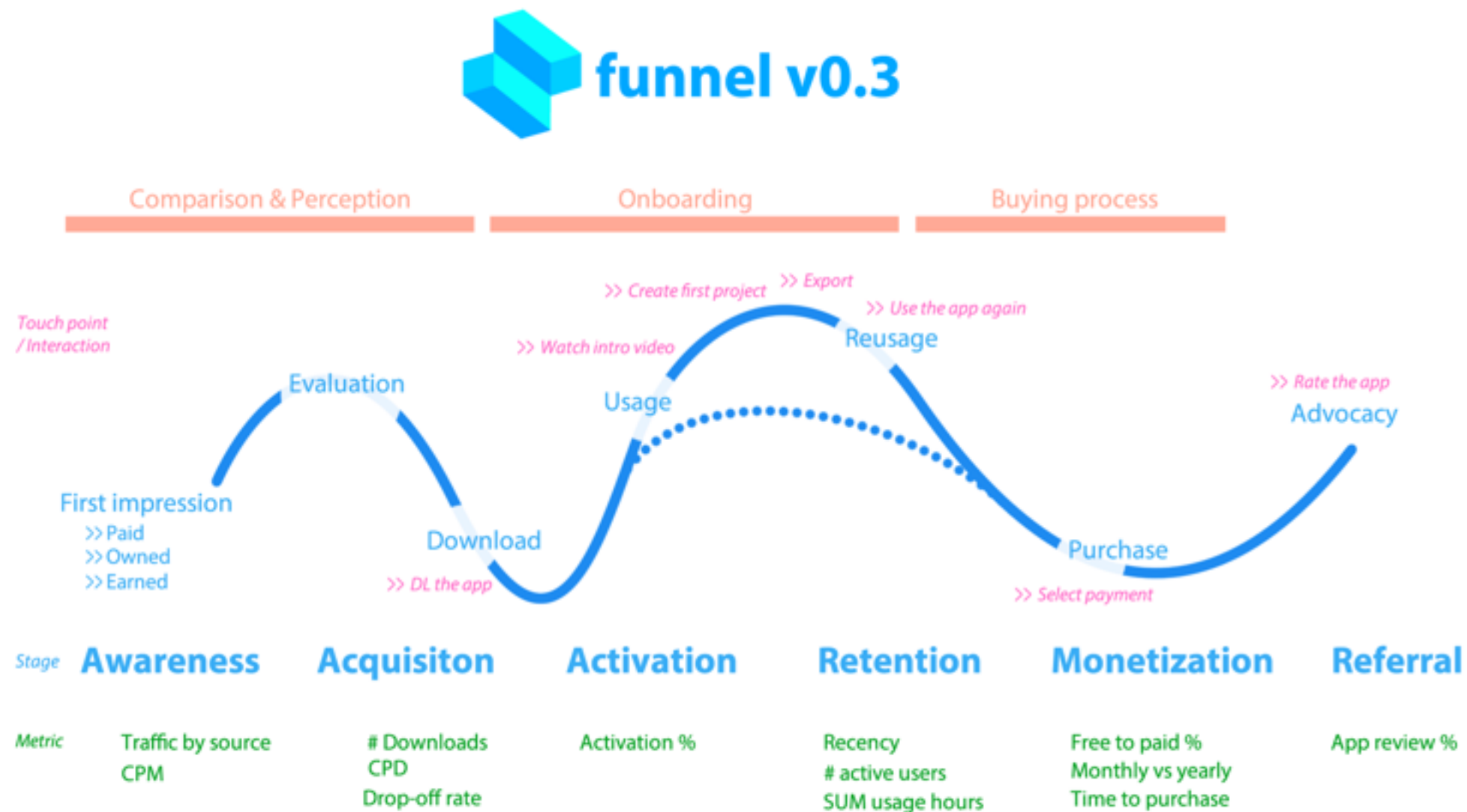
Stuff we use

- Mixpanel
- Crashlytics
- Firebase
- Facebook SDK

Marketing magic

- You just upload your app to the app store and people will download it, you don't have to do anything.
- Marketing is  bullshit  it is all about writing nice stories.

Marketing magic




- <http://thepitch.hu/app-marketing-es-growth-hacking-shapr3d/>

Facebook ads

- Objective: get app installs, reactivate users, raise awareness
- Key: engaging content, smart targeting

Industry average: 300HUF

<input type="checkbox"/>		Ad Name	Delivery	Results	Reach	Cost
<input type="checkbox"/>	<input checked="" type="checkbox"/>	 Most comfortable - Worldwide Ad Worldwide App Install > Worldwide mixed intere...	Active	640 Mobile App Inst...	34,671	Ft123 Per Mobile A...

Industry average: 50HUF (!)

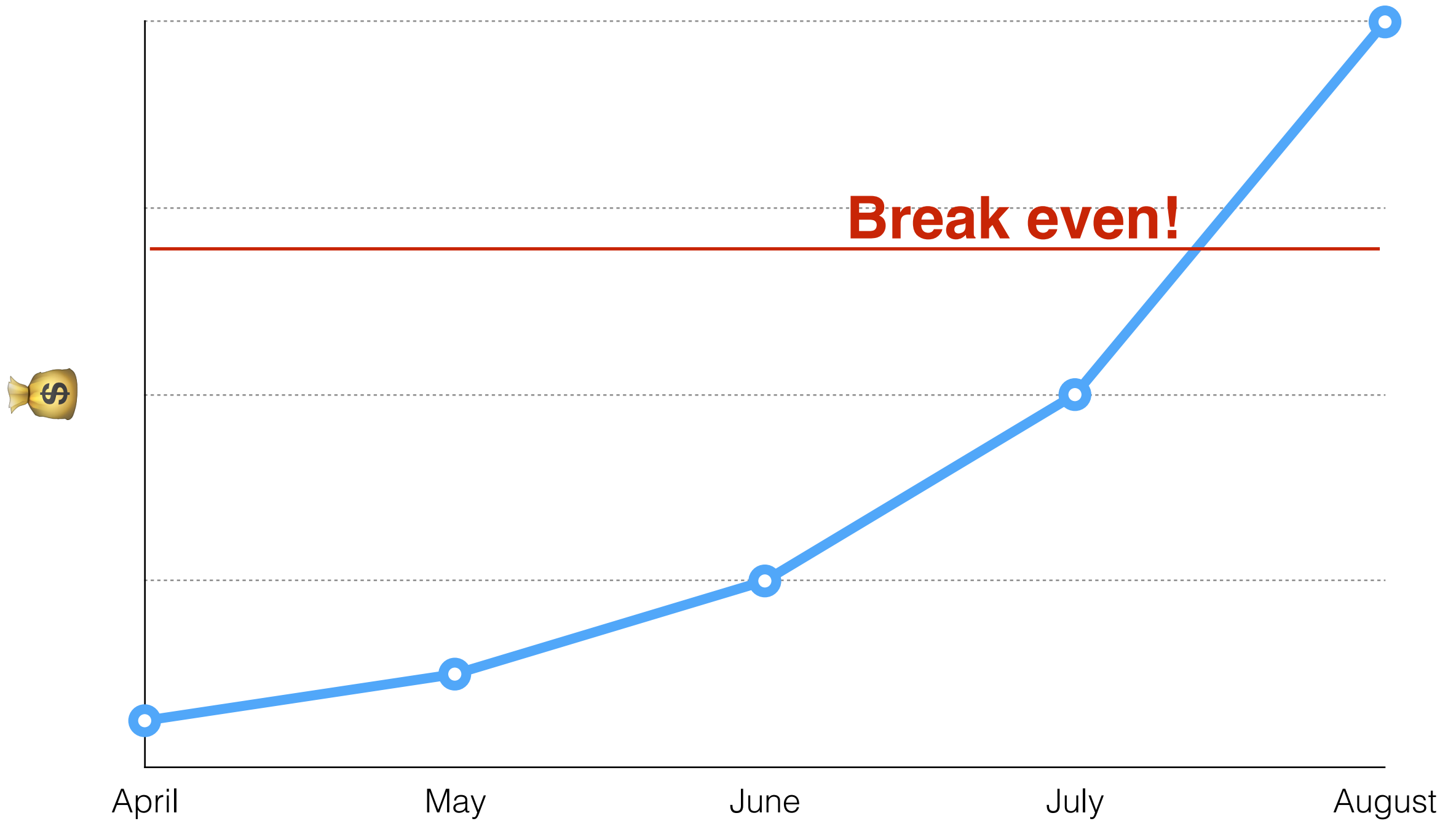
<input checked="" type="checkbox"/>	Shapr3D campaign #1		Completed	484,783 Post Engage...	906,983	Ft0.04 Per Post ...
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How do we work?

- Management? What management?
- Lots of individual responsibility
- We work hard, and we are proud of it
- We talk with our users directly, there is no communication gap between developers and customers
- 2 dev + 2 marketing and we are hiring



Traction



The Team

