AGILE UNDER PRESSURE

Shipping a disruptive medical device in less than two years
At the end of this presentation, you will know all about

1. Stakeholder and early adopter **confidence**
2. **Research and validation** in an agile context
3. **Scope changes** and **conflicting priorities**
4. **Managing all cogs** in the wheel
We **enable bright outcomes** by transforming content into insight and emotion.
Unforgettable moments to amaze and entertain
A brighter approach to connect and engage
A new life-saving perspective
The bigger picture to stay in control
WE’RE A DIGITAL PRODUCT STUDIO
We’re a team of +110 **software engineers, product designers and digital strategists** with a passion to create digital products that **make people happy and businesses grow.**
Barco Demetra is an all-in-one skin imaging platform that allows dermatologists and other healthcare professionals to acquire, document, review and analyze images of the skin.
Barco Demetra / 3 Components

Imaging Device

Cloud

Web Platform
Barco Demetra / Toolkits

1. **Image Documentation Toolkit**
   Digital dermatoscope. Basic image documentation on device, full image management via web application.

2. **Workflow Toolkit**

3. **Skin Cancer Analytics Toolkit**

4. **Skin Cancer Decision Support Toolkit**
   *Future functionality*
Digital Dermatoscope

- **Medical** device
- Android based
- Two **cameras**
- Detachable **grip**
- Add-on **cone** for non-contact dermoscopy
Image Acquisition

- **Two cameras** for different image types:
  - Multispectral dermoscopic images
  - Clinical close-up & overview images

Barco Demetra / Image Documentation
Image Documentation

- **Basic** image library & documentation on device
- **Full image library management** via web app
Device workflow

- **Identify** patient
- **Localize** image on mannequin or overview image
- **Compare**
- Set **diagnosis** & management **strategy**
Web workflow

- Manage patients
- Document lesions & consultations
- Analyse
- Reports
FROM IDEA TO CONCEPT
Incubator

- Barco strategy project
- Looking for "bold" growth initiatives in Healthcare division
- Resulted in two incubators
- "Automated Decision Support" in Dermatology
Barco Demetra / Idea to concept

Innovation on 3 axes

1. New market
   Dermatology

2. New solution
   Innovative digital solution for dermatologists & other healthcare professionals

3. New business model
   SaaS model, including both hardware and software
Research

- User **interviews**
- Clinical **workflow** observations
- Analysing advantages & pitfalls of **competitor tools**
- Technical **research**
Barco Demetra / Idea to concept

**Pivot**

- Original idea focused merely on
  - AI centered solution
  - Software only
- Pivot *after market research & talking* with dermatologists
Barco Demetra / Idea to concept

**Hardware development**

- Barco's **core capability**
- Started in **own laboratory**
- First prototype of **optical stack**
  - Validation of image quality with clinical partners
Barco Demetra / Idea to concept

**Hardware development**

- **Hardware design**
  - User validation of different hardware prototypes
- **ODM** Partner
Clinical Partners

- Partnerships with **leading hospitals** and **key opinion leaders**
- **Research** projects
- **Validation** of image quality
- Building up **image database** for training **algorithms**
Barco Demetra / Idea to concept

- Business development
- Medical regulatory
- Research activities
- Product management
- Strategic marketing
- Device app development
- Usability engineering
- Backend development
- Electronics engineering
- Mechanical engineering
- Optical engineering
- Web app development
- Android & driver stack
- Image processing software
- Cloud configuration & operations
Barco Demetra / Idea to concept

Business development

Research activities

Strategic marketing

Product management

Medical regulatory

Electronics engineering

Mechanical engineering

Usability engineering

Android & driver stack

Optical engineering

Backend development

Device app development

Usability engineering

Web app development

Backend development

Image processing software

Cloud configuration & operations
Software applications

- **Clear idea** of today's problems
- High level view on **clinical workflow**
- Need for both **device and web** application
- Time to market
  - Finding **external partner**
FROM CONCEPT TO PRODUCT
Product Exploration
Where can we create value?

Prototyping & User validation
Validating early solutions

Product Delivery
Build, ship & iterate
Product Exploration
Where can we create value?
Barco Demetra / Exploration

Getting started

• **Capture** the requirements
• Getting to know the product
• Focus on the **design** and **technical challenges** at first
MVP

MMP

- Hardware
- Competitors
- Expectations
- Medical device (CE / FCC / UL)
Barco Demetra / Exploration
Weekly syncs

- **Client involvement** - Sparring partner
- **Designers** and **Solution Architect**
  - Show design iterations
  - API spec
- Define **requirements** and scope
End of Day syncs

- Every day, at the end of the day
- With the whole team involved
- Collaborative design
- Cross-checking solution architecture with the designs
Alignment is key.

Keep all collaborators involved from the early start.
Product Exploration
Where can we create value?

Prototyping & User validation
Validating early solutions

Product Delivery
Build, ship & iterate
User testing

- **Early** in the design phase
- With **end-users** (dermatologists)
- **Frequent** basis
- Actionable **take-aways** to take into account
Validation Format

- Clickable prototypes
- Mocked 3D printed device
- Prepared user scenarios
- Audio recording
- Clear documented format
Barco Demetra / User Validation

**Wireframe**

- Gathering feedback with **wireframes**
- Resulting in **defining the initial designs**
Barco Demetra / User Validation

Icons

Understanding is good, user testing is better.
Barco Demetra / User Validation

**Interface**

- **Image as main focus**
- **Hide** interface by a single tap
Take aways

- As *soon as possible*
- *Include designers* working on the project
- *Document* clear actions, and iterate, before impacting development
- Go into *detail* for UX and Design
- Very valuable *feedback*
Don’t stop user validation once the product has shipped.
Innovator Community

- **Early adopters** - pioneers
- **“Friendly”** customers
- Different ** personas**
- **Beta** releases & feature flagging
- **Staged roll out** (geographically)
Product Delivery
Build, ship & iterate
Barco Demetra / Delivery

Just-in-time delivery

• Short **cycle time**

• **Epic planning**
  • Building; while exploring upcoming epics

• **Two development tracks**
  • Tackle epics together (learnings)
Don’t wait for **pixel perfect designs.**
Cross Functional Team

Front-end web, Cloud & API, React, Product strategy, Product design, Product management, Quality assurance, Solution architecture
Limiting overhead

- **One Product Manager**
  - Managing backlog + channeling client input for both platforms

- **One Solution Architect**
  - Technical SPoC for both teams
Scaling teams

- Exploration
  - First 2 months
- Product Delivery
  - Scaling the development teams

Barco Demetra / Delivery

- Team lead
- Product Manager
- Solution Architect
- Product Designer
- Engineers
- QA Engineers
Scaling teams

• Exploration
  • First 2 months

• Product Delivery
  • Scaling the development teams

Barco Demetra / Delivery

Team lead
Product Manager
Solution Architect
Product Designer
Engineers
QA Engineer
Client Partner

Device
Web
CHALLENGES AND HOW TO OVERCOME THEM
BACKGROUND
Background / Context

- Cross-team
- Cross-technology
- Cross-location
- Post-launch
Background / Cross-team
Background / Cross-technology

Mobile & Web

Deep learning

Cloud & API
Background / Post-launch

Pre

2018

Launch

Q1 2019

Post

...
There is no ‘one solution fits all’ approach
3 CHALLENGES
Challenges

1. Information flow
2. Planning
3. Way of work
INFORMATION

How do we keep everyone in the loop?
How do we avoid information overload?
MAXIMISE TRANSPARENCY
Information

What are we aiming for?
Who's gonna use this solution?
How can I truly contribute in my day-to-day work?

Can we start work on feature X?
What should we work on next?
Is this requirement still relevant?

Is this functionality "done"?
Is this really a bug?
Can we fix this later?

Shared vision

Prioritised, outcome-driven backlog

An end-to-end definition of done
Synchronisation / What worked for us

- Daily sync call
- Shared sprint goal
- Shared sprint review
- Team interfaces (domains)
- Outcome-based roadmap
- Collaborative tooling
Collaborative Tooling / One source of truth

Slack
zoom.us

Jira Software
Bitbucket
Confluence
2. PLANNING

Are we focussing on what matters?
Planning

Roadmap → Milestones → Prioritisation → Estimates
Roadmap / Situation

**Situation**

- Very detailed
- Output-driven
- Capacity-driven
Learnings

• Start soon
• Incorporate context
• Update frequently
Situation

- A lot of events and exposure
- How do we keep focus?
CEO demonstration 17th of September

- On the 17th of September, Barco will demonstrate the clinical workflow. The CEO will have 5 minutes of guided, hands-on experience.
- The demonstration will happen on the preproduction environment and will be monitored by X.
Learnings

• Concrete, unambiguous milestones
• Date - deliverable - audience
Planning / Prioritisation

Created and Resolved (Device)

Created | Resolved

Created and Resolved (Web)

Created | Resolved
Prioritisation / Situation

**Situation**

- Scope evolved continuously, at a faster rate than development finalised outcomes
- Getting the product in the hands of users generated tons of insights
Learnings

- Prioritise ruthlessly
  - Empower team
  - One product owner
- Clean up
- Sprint backlog is not written in stone
Estimations / Learnings

**Situation**

- First internal estimates were off by a factor 10
- Decisions were often made based on deprecated estimates and insights
Learning

- Know why
- Make transparent
- Estimate end to end
- Re-estimate
3. WAY OF WORK

Are we working efficiently?
Are we focussing on what matters?
Empirical Process Control

Adapt

Inspect

Transparency

4 weeks
What is helping us?
What is waste?
Way of work / KPIs

**Efficiency**
- Deployment frequency
- Cycle Time

**Quality**
- One sprint goal
- Number of open bugs (bugs-first)
Way of work / KPIs (example)

<table>
<thead>
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<th>Sprint</th>
<th>fixVersion</th>
<th>Goal</th>
<th>cycleTime</th>
<th>Tickets closed</th>
<th>Impeded</th>
<th>Impeded (ITP)</th>
<th>Fixed bugs</th>
<th>Open bugs</th>
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<td>OTA in onboarding</td>
<td>3.6</td>
<td>12</td>
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<td>16</td>
<td>1.6.0 (RC-2)</td>
<td>OTA in network settings</td>
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<td>17</td>
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<td>Release</td>
<td>4.9</td>
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<td>0</td>
<td>0</td>
<td>12</td>
<td>4</td>
</tr>
</tbody>
</table>
Experiment, fail fast
Way of work / Retrospect

Period 1

Sprint 1 → Retrospect 1

Sprint 2 → Steerco 1

Period 2

Sprint 3 → Retrospect 3

Sprint 4 → Steerco 2

Retrospect 2

Retrospect 4
Way of work / Global retrospective

**How?**

- All involved parties represented
- After the sprint review session
- Clear focus per retrospective, e.g. retrospective goal
- Actionable and timely
- Celebrate achievements!
Examples

• Daily sync call
• Move to a Kanban approach
• Setup of shared Slack environment
• Use of the real device instead of mocked interfaces
• …
TAKE-AWAYS
Actively listen to your customers and act upon it.
Find the balance: **good enough for now, safe enough to try.**
Be “agile”, decisive, ruthless:

it’s never too late to change priorities.
Radiate information.
Define and align towards the common purpose.
ENABLING BRIGHT OUTCOMES

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