

Reflections from the development of Racefox – an AI coach for endurance training

Christer Norström

WeMeMove AB


christer@wememove.com

"Racefox has become my own personal coach. It inspires me and pushes me forward".

Petra F.

Racefox 





I've tried to run my usual 5K path faster for five years now, and I'm still not a second faster.

I dream of running a marathon but I don't know how to prepare for it.

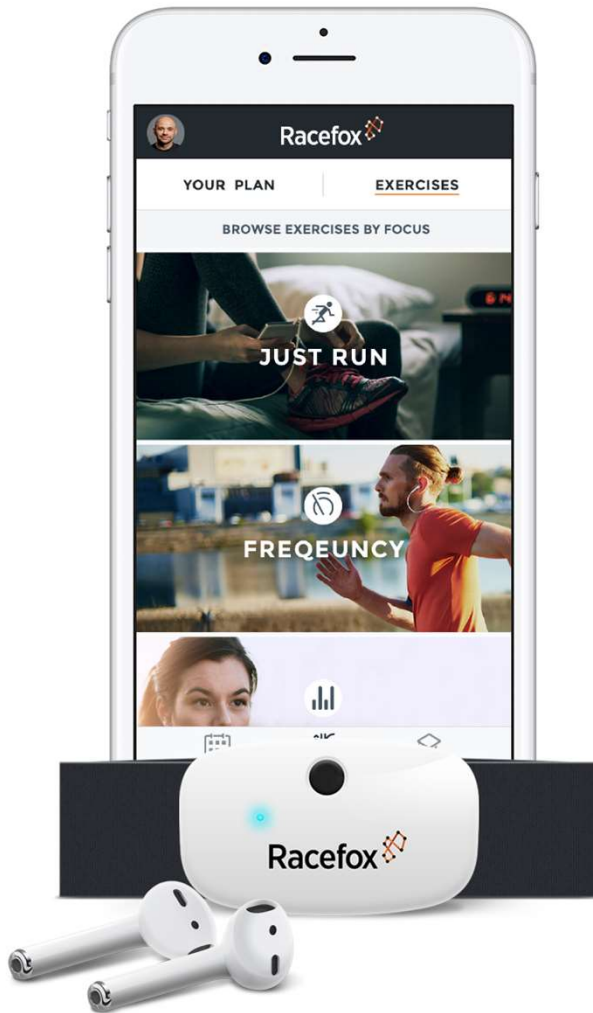
I want to run more, but have problems with my knees. What should I do?

I want to finish the XC skiing race Vasaloppet in 6 hours. How can I do it?

80% runners run incorrectly
55% runners get injured every year

Problem:
Human coach—
€80 per hour

Racefox personalized coach



It's with you at every step to reach your goal:

- Understands your strengths and weaknesses.
- Gives feedback on the spot whether you are moving correctly.
- Tailors interactive workouts to your needs.
- Builds dynamic training plans that adapt to your progress by combining how you move in detail, present state, with your goals and deep domain knowledge.
- Prevents injuries and helps you recover.

Customers love their Racefox coach

- Skiers using Racefox cut about 15% in time at Vasaloppet.
- Runners cut ~2 mins from their 10 km time after 6 weeks of training.
- 10% of all Vasaloppet 2018 skiers train with the Racefox.
- After 12 months, customers in average still train 1.5 times / week on average and are **still paying!**



Racefox



Surveys

Data

Data

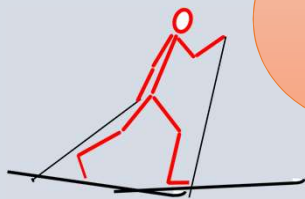
Race data



Klass	Plac	Ålder	Navn	Klubb	Tid	DKR
H 21+ - Mästare klassisk stil	1	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	2	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	3	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	4	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	5	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	6	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	7	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	8	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3
H 21+ - Mästare klassisk stil	9	38	Anders Jönsson	Åre SK	1:08:12.1	81.3.3

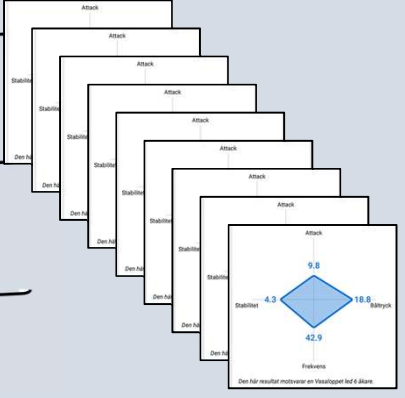
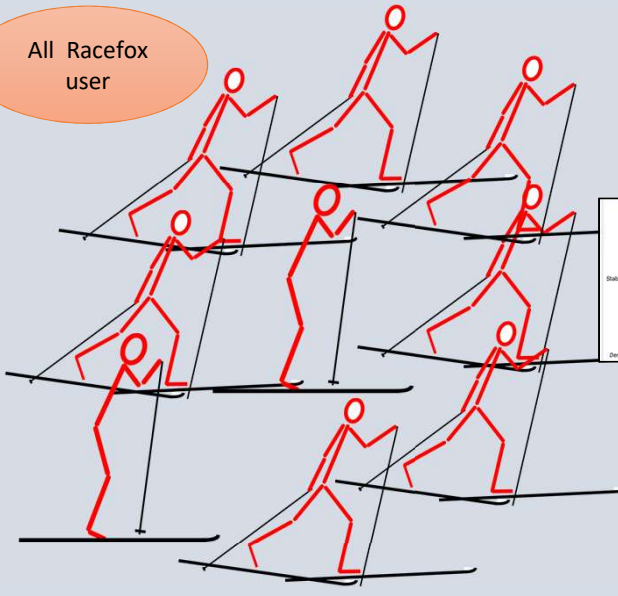
ME Dreams Goal Ability

Small data

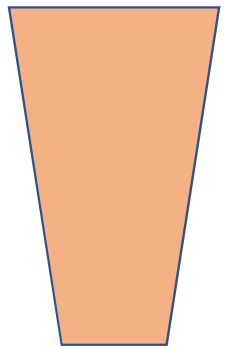


All Racefox user

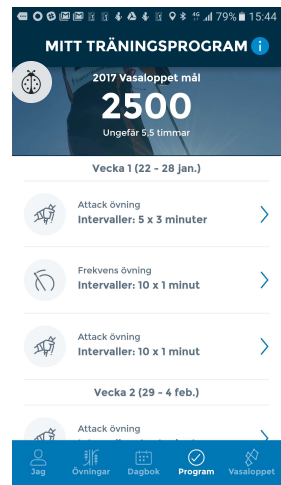
Data



A personal coach



Personal digital coach to reach your goal



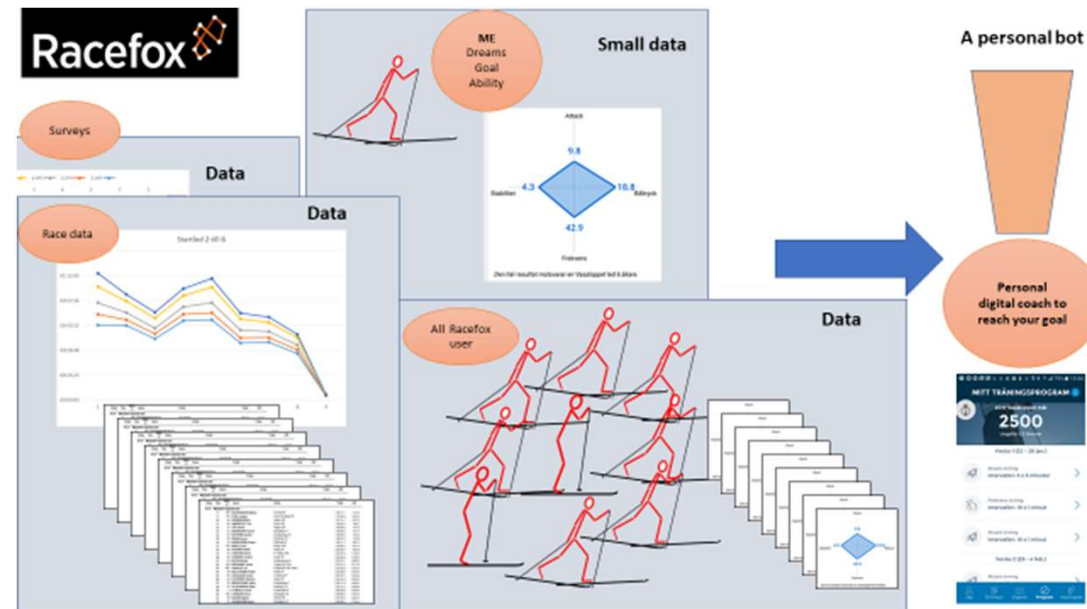
Types of coaching

- Real-time coaching
- On-line coaching
- Direct after the session
- In between sessions.
- Personalized training plan for the user

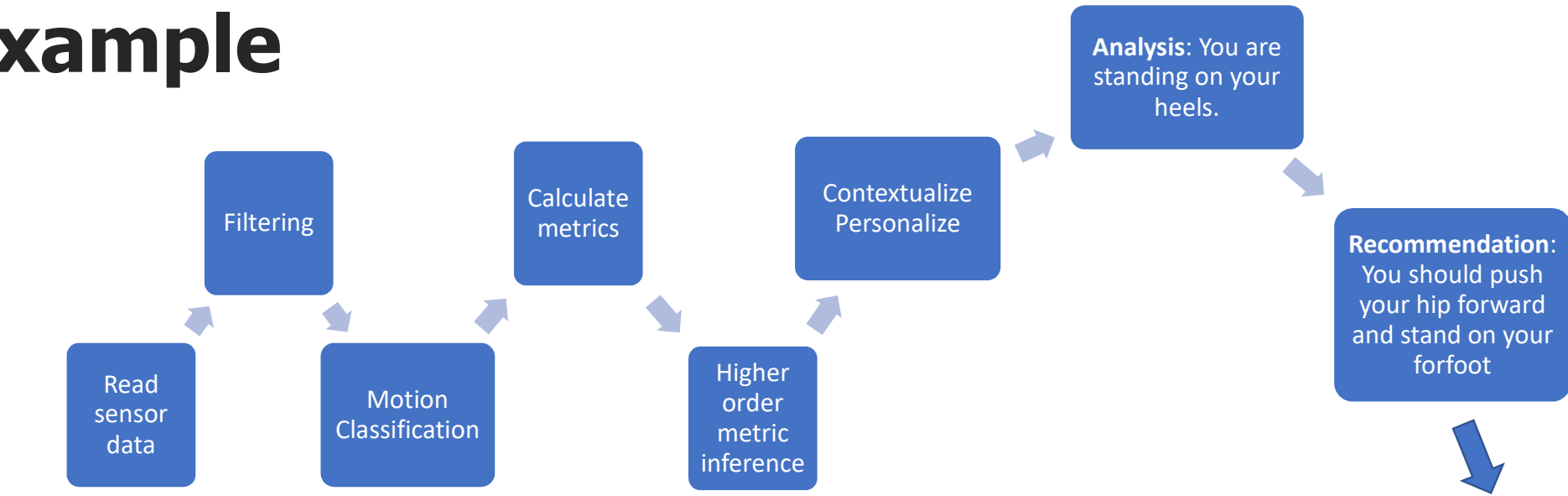


What is the major challenge?

- Providing **relevant** coaching information to the user!
- Relevant = **precise** information at the **right** time which **makes sense** and which does not feel the same.



Example

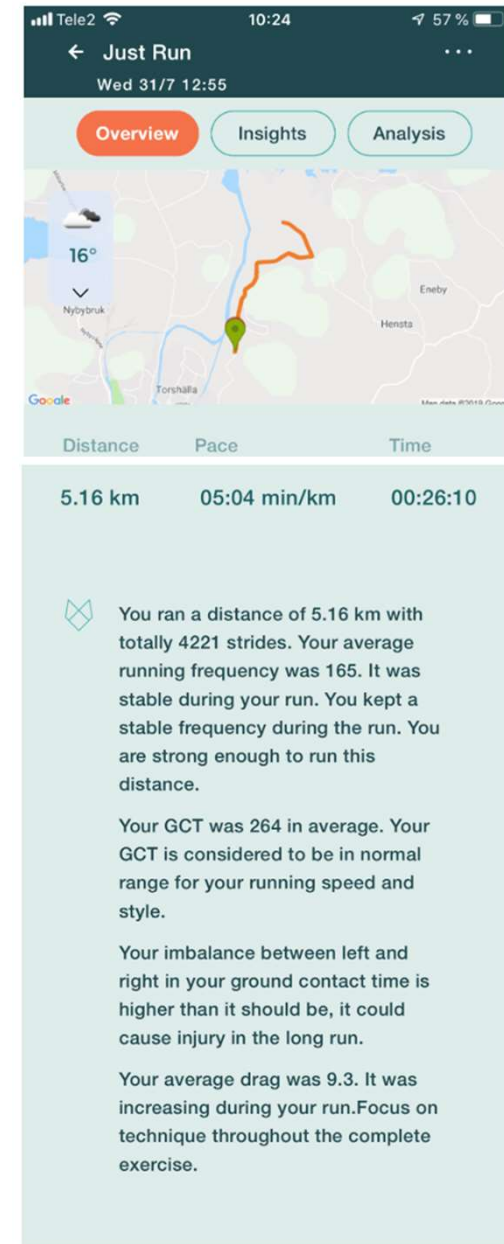
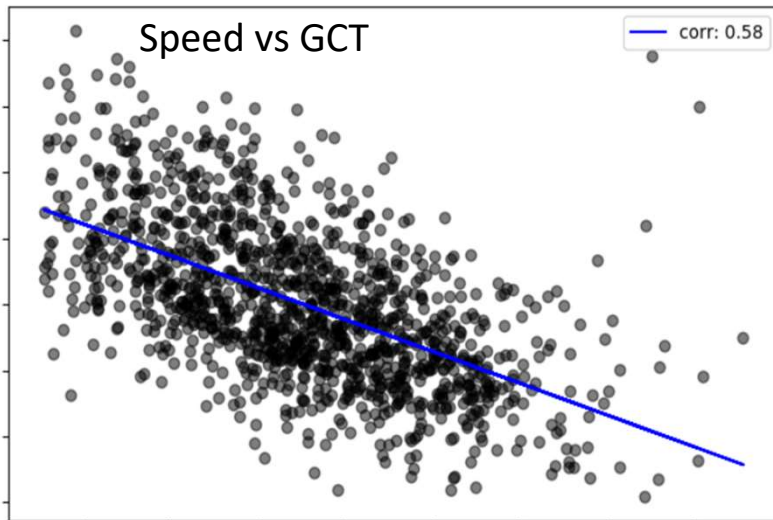




Run insights

What do we know?

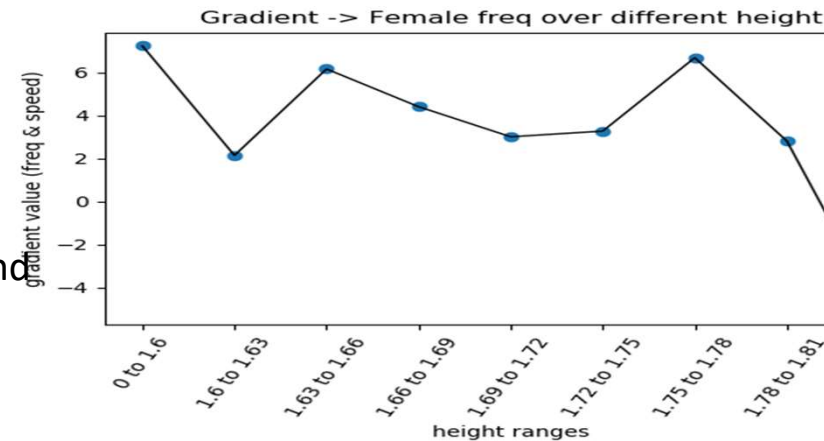
- What frequency you should have at a certain speed
- What Ground Contact Time you should have at a certain speed
- When your impact is too high considering your speed
- When you have too long strides and your arms swing too much forward
- If you are more of a glider (with higher frequency and lower impact) or a gazelle with lower frequency and higher impact)
- If you have an unbalance in your body, you maybe should strengthen your body before starting to run



Why does Racefox know this?

- We are not biomechanics but we have data
- We have already about 100M run steps investigated and daily getting more.
- We can correlate parameters and runners in infinite aspects
- We can create out of our data thought leadership – university comes to Racefox

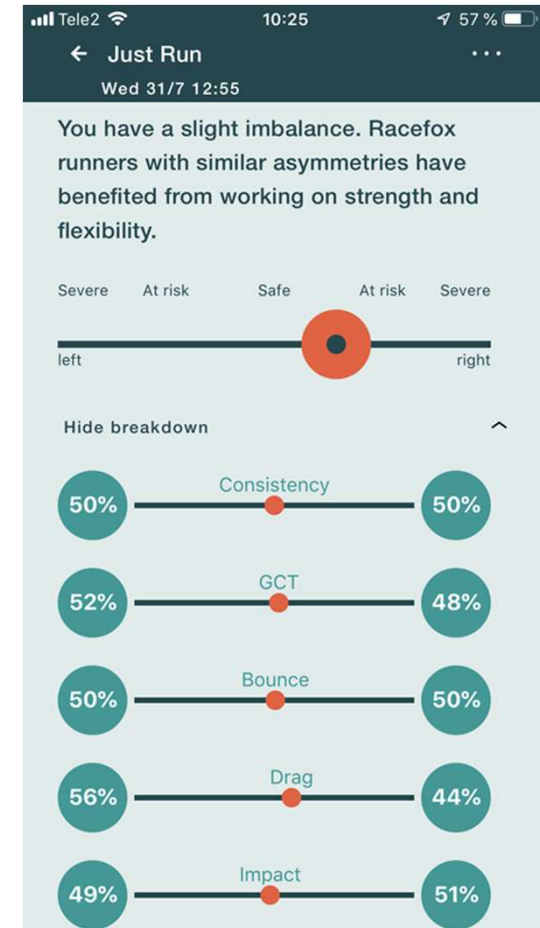
No correlation
between length and
frequency for
woman



What does Racefox do for you?

- You get a feedback adapted to YOU while running
- Racefox measure your changes while you run and coach you to improve
- Racefox warns you when risk for injury

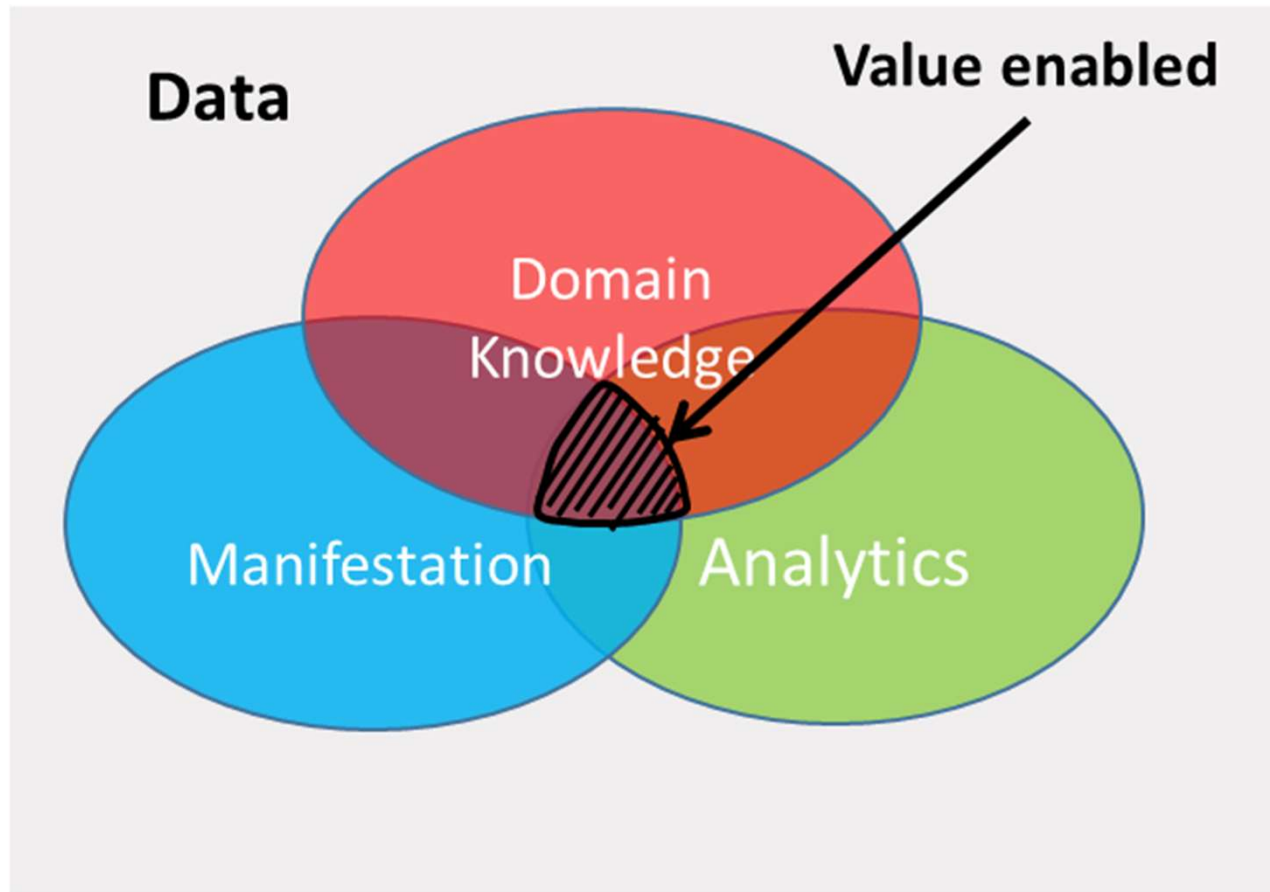
KPIs	Left	Right
Stabilitet	1.56	1.68
Ground contact time	273.69	265.58
Bounce	6.87	6.61
Drag	6.44	7.32
Impact	28.70	31.99



How to find the cause to an unbalance and/or pain and what to do?

- Detecting unbalances of the runner
- Analyze the relation between the KPIs and their values
- Make a recommendation of specific exercises to the runner

Value creation from data, what is required?



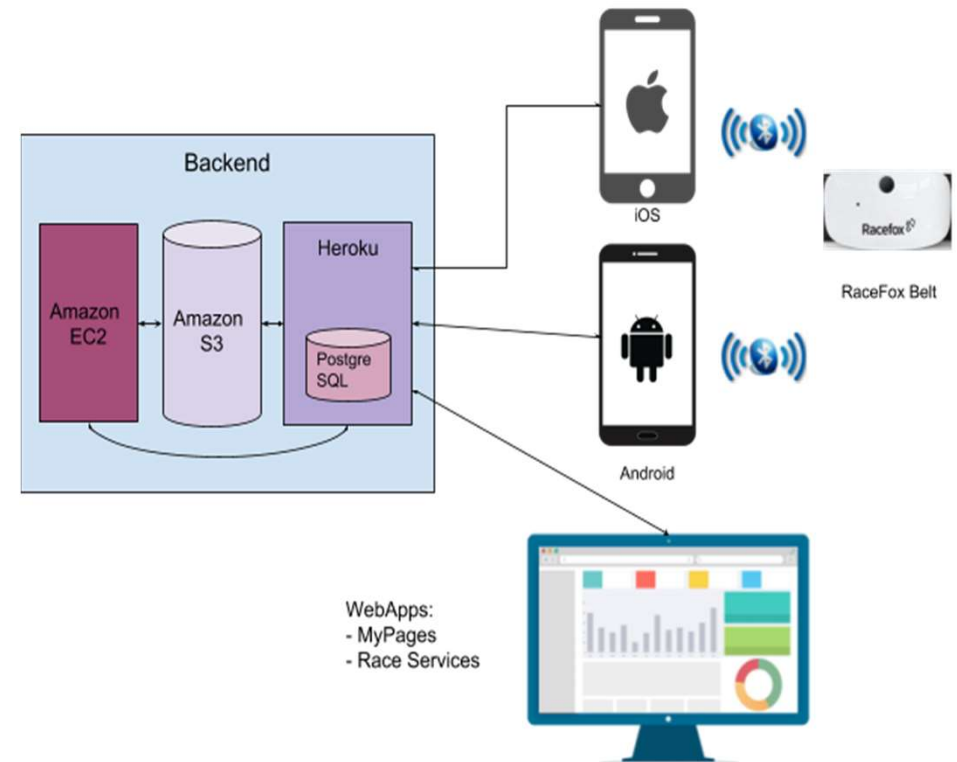
Competence necessary for domain specific data driven service development

- Domain and customer understanding
 - What are potential values?
- Data science
 - Analytics competence close to the domain
- Marketing and communication
 - Integration in market activities
 - Design of services
- Useability design for the domain
- Implementation skills for front end and back end

- Value architect
 - Responsible for integration of domain knowledge, user value and technology
 - Leadership – ability to create high performance team
 - Ensure that the team communicates and always has a value focus

Our technical competence

- Data cleaning and exploratory analysis
- Sense making of information
- *Intelligence = statistics x machine learning x optimization x heuristics x decision trees x interaction*
- Build end to end systems including data storage, cloud infrastructure, machine learning, statistics, expert system and front ends (apps, bots and web services)
- Visualization and custom data exploration tools
- Dialogues and Dialogue platforms
- Leading complex projects



THANKS!

