

BEST PRACTICE

PRODATA CONSULT MAGAZINE ABOUT IT, PROJECTS AND THE PEOPLE BEHIND THEM. 9, 2016

Charting a new course for a supertanker

Interview with Kristian Waneck,
Head of streaming at DR





Page 12

MobilePay: Take your business to the next level with mobile payments

Interview with Michael Schmidt Barsøe, Head of Mobile Payments at Danske Bank and Peter Gregersen, Lead User Experience Specialist at MobilePay.

Page 4

Charting a new course for a supertanker

Interview with Kristian Waneck, Head of streaming at DR.



Page 8

World-class public service

Interview with

Sebastian Ostenfeldt Jensen, Fullstack developer at ProData Consult, working for the Danish Broadcasting Corporation.



Page 16

Snow Patrol

a Danish app with Polish impact

Interview with Michal Stawarz and Przemysław Panczyk, app developers at ProData Consult, working for LE34.



Page 20

After 15 years with apps: still based on the same logic

Interview with Jørgen Staunstrup, PhD in computer science and external lecturer at the IT University of Copenhagen (ITU).

Best Practice 9 2017**Client magazine**

ISSN no.: 2245-6090

Legally responsible editor

Søren Rode

Editor

Phillip Ørbæk

poe@prodata.dk

Graphics and design

Linnea Brix

Journalists:

Phillip Ørbæk

Tina Lee

Photos

Andreas Bro

Pawel Murak

Publisher

ProData Consult A/S

Limited edition

Print

LaserTryk.dk

Main offices:**ProData Consult Copenhagen**

Stamholmen 157

DK-2650 Hvidovre

ProData Consult Germany

Karlsplatz 5

80335 Munich

Germany

ProData Consult Netherlands

Avelingen-West 1

4202 MS Gorinchem

Netherlands

ProData Consult Norway

Ole Deviks vei 4

0666 Oslo

Norway

ProData Consult Poland

ul. Domaniewska 39a wejście B

02-672 Warszawa

Poland

ProData Consult Sweden

Vretenvägen 6

171 54 Solna

Sweden

Phone: +45 43 43 11 71

info@prodata.dk

www.prodataconsult.com

www.it-consultant.com



2017 – off to a flying start

The first half of 2017 was eventful for ProData Consult. In the course of the first six months of the year, we went through a merger as well as gaining new nearshoring offices in Krakow and Łódź – and more active consultants than ever before.

We kicked off 2017 by merging our Dutch branch with the Dutch company Eliantie. The merger has provided us with a more solid position on the Dutch market, and we are now looking forward to harvesting the fruits of our expansion of our international operation. Speaking of expanding international operations, we also opened new offices in Krakow and Łódź to supplement our existing Polish headquarters in Warsaw, which means we can offer our clients more and better nearshoring

opportunities in Poland.

At the same time, we have more active consultants in the field than ever before. Over 1,000 consultants are now delivering quality service to our over 300 clients every day. You will have a chance to meet some of these clients and consultants in this edition of Best Practice, which takes a closer look at mobile applications.

You'll meet the head of streaming services development at the Danish Broadcasting Corporation (DR), who explains how a reorganisation and agile transformation directly contributed to the development of a new and improved radio app. And you will get to know a passionate ProData consultant who is constantly finding ways to

optimise the performance of DR's applications. We also stopped by MobilePay to catch up on the latest news on mobile payments.

Last but not least, we visited ProData Consult's nearshoring center in Warsaw and talked to two ProData consultants who let us in on how they went about developing a state-of-the-art app on behalf of our client LE34.

Enjoy!

Søren Rode

CEO



Charting a new course for a supertanker

A REORGANIZATION AND AN AGILE TRANSFORMATION ARE HELPING THE DANISH BROADCASTING CORPORATION (DR) TO OFFER WORLD-CLASS STREAMING SERVICES – AND WITH THE LATEST UPDATE OF THE DR RADIO APP, THE FIRST PRODUCT HAS ALREADY LANDED ON THE NEW SHELF. KRISTIAN WANECK, HEAD OF STREAMING AT DR, EXPLAINS WHAT THE CHANGES HAVE MEANT FOR THE DEVELOPMENT OF THE NEW APP.

Interview with Kristian Waneck, Head of streaming at DR.

Streaming services of the highest caliber. That's DR's ambition. In an important step towards that goal, DR recently launched a new, improved version of their radio app. Released in early April, it has already become a success. DR is attracting more users, and on average, they're using the app longer.

When the process of developing the new radio app was set to begin, DR teamed up with NRK, the Norwegian public broadcasting corporation. The Norwegians were planning a similar upgrade of their radio app, so it made sense to work on the project together. This collaboration created a new constellation outside the normal organizational framework. It gave the developers more scope for innovation, as well as good opportunities for testing the approach the new transformation initiatives are seeking to implement.

"We had the same principles for how we wanted to work – in a more iterative, agile and product-focused way," explains Kristian Waneck.

And precisely a focus on the product is the cornerstone of the agile transformation which DR is working intensively to spread throughout the large organization. While the collaboration with NRK outside the usual framework made it simpler to work in an agile way on this particular project, it is taking a lot of elbow

grease to change the work routines within DR's organization. But nonetheless, the app is clear proof that agile methods are the right path to delivering world-class streaming services.

TO MARKET FASTER

To deliver the goods, DR has to incorporate new trends, user needs, good ideas and necessary improvements in their products.

To achieve this, DR is also working to shorten time-to-market and ensure fast execution. The agile approach will ensure that DR's products are always up-to-date. Waneck explains:

"The market is developing so fast that we don't have time for long development processes. If we don't take an agile approach, we simply risk missing the mark with our products and improvements."

*Kristian Waneck,
Head of streaming at DR*

"We need to work on the products we have on the market on more of an ongoing basis, instead of launching something and going back to it later, which is how we dealt with the old version of our radio app, for example."

Unlike the old app, the new app was developed on the basis of the principles DR aims to practice going forward – principles which make it possible to react to feedback from the market and continuously develop features for the app. And DR is well on the way. A wide range of improvements are already in the pipeline which will keep the app on the cutting edge of users' needs.

"We created a first release we could take to market quickly, and which matches the expectations and demands our users have. We also have a list of additional improvements which lie ahead of us. They'll be added as regular updates with the improvements users ask for," says Waneck, who goes on to explain why the agile approach is so important:

"The market is developing so fast that we don't have time for long development processes. If we don't take an agile approach, we simply risk missing the mark with our products and improvements."

It is a question of defining the least possible product that gives the user value while staying true to the overall vision.

"We have a product vision for the app, but if we were to realize it 100% with the first release, the product would be launched much later – and by then, users' behavior and needs will certainly have changed," says Waneck.

REORGANIZATION PUTS THE PRODUCT IN FOCUS

In addition to the agile transformation, a recent reorganization has gathered the entire value stream for DR's primary products in a number of divisions, in order to focus the organization on products, not projects. By having employees work in a product-oriented way rather than a project-oriented way, a long-term sense of ownership of the product is created.

"Before, you might have just delivered your project and gone on to the next one. But with our new approach, we create a sense of investment in the products and the kind of constant attention it takes to maintain sky-high quality," says Waneck.

His goal is for DR to become an organization where developers have a greater stake in the products. Because the requirement specification on the developers' table no longer determines how a task is to be approached. Waneck explains:

"Now there's actually a dialogue about what the goal is, and how we can get there. It gives people a sense of ownership."

This is reflected in how the new radio app was developed: the team seized the moment, took ownership and drove the development of the design of the product. Although the organization had some requirements about what needed to be delivered, the team had a major say in determining how the task ultimately was solved.

"Now there's actually a dialogue about what the goal is, and how we can get there. It gives people a sense of ownership."

*Kristian Waneck,
Head of streaming at DR*

Taking ownership means centering the development process on the product. Development is not done for development's sake, but rather with a constant focus on optimizing and improving the product.

For Waneck, this means that agility is not only about achieving a higher release frequency.

It is also about creating a culture in which developers take responsibility for the products in their portfolio. And in relation to DR's new radio app, the product-oriented approach has paid off:

"We now have a team in place which has the product focus necessary to deliver continually. This has created focus in relation to our primary tasks, and we're better at rejecting tasks which aren't focused on the product."

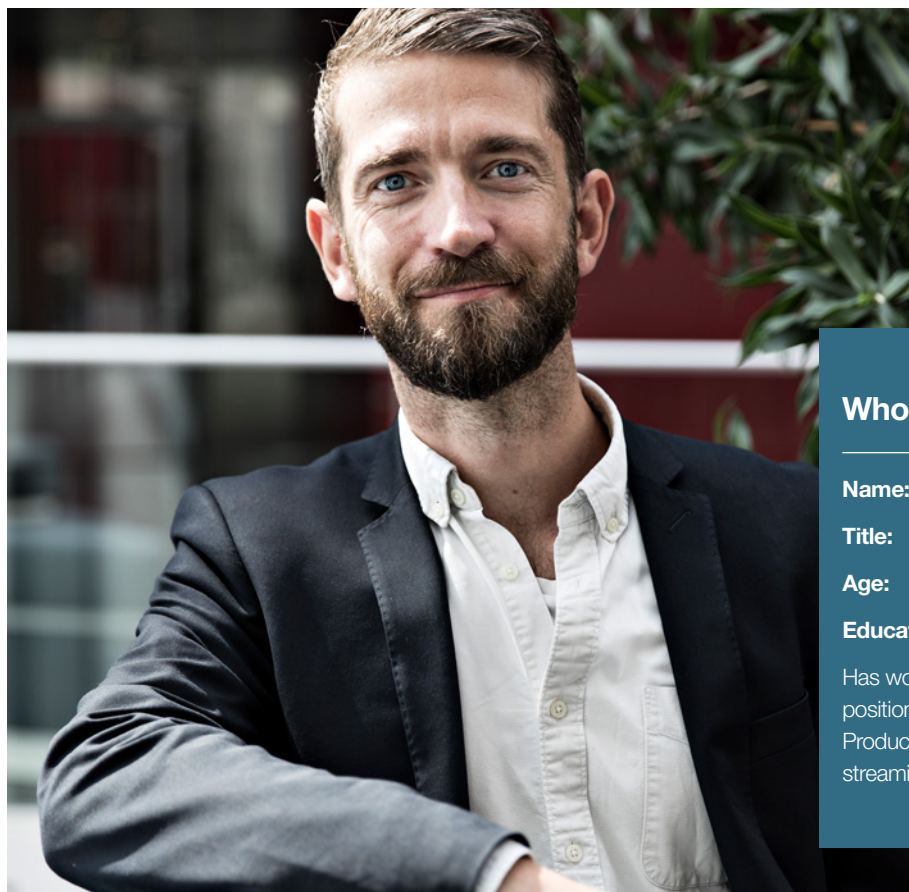
A STRONG INTERNAL SETUP

But it's one thing to have ambitions – realizing them is a different ballgame. For this reason, according to Waneck, achieving the right mix of internal development teams and external suppliers is crucial. Agile development takes highly skilled development teams who dare to take responsibility for optimizing DR's streaming services.

"We believe very strongly in having skilled in-house development teams. A strong internal setup gives us a speed and flexibility we can't achieve by relying exclusively on external suppliers."

In order to create a powerful in-house development organisation with the competencies the organization needs, DR uses external consultants with the right competencies to supplement the in-house team.

"We bring in supplementary external consultants to achieve the volume of competencies we need, but also to bring in the special competencies needed to solve the tasks we are facing." 🗨️



Who's Who:

Name: Kristian Waneck

Title: Head of streaming

Age: 40

Education: Master's degree in communication

Has worked at DR for the past eight years in various positions, including Head of IT infrastructure and Production Manager before he became Head of DR's streaming services in late 2016.



WORLD-CLASS PUBLIC SERVICE

THE DANISH BROADCASTING CORPORATION'S TV APPLICATION HAS TO BE ERROR-FREE AND TOP-TUNED TO KEEP ITS USERS COMING BACK. IN THIS ARTICLE, PRODATA CONSULTANT SEBASTIAN OSTENFELDT JENSEN SHARES THE RECIPE FOR HIGH PERFORMANCE: A DEDICATED TEAM, INVENTIVE SOLUTIONS AND A FAULT LOCALIZER APP.

Interview with Sebastian Ostfeldt Jensen, Fullstack developer at ProData Consult. Working at the Danish Broadcasting Corporation (DR).

Do you remember the days when you had to be sitting in front of your TV at a specific time to watch the news or the next episode of your favorite series? Now most of us take it for granted that we can catch our favorite shows on the go or whenever we happen to feel like watching. We no longer surf channels, we surf content providers. So if Denmark's national public service broadcast corporation DR is going to hold on to its viewers, it has to deliver world-class services.

When Danes open the DR TV app on their mobile phones to watch the local versions of Bake Off or X-Factor, they step into a whole universe of content – content provided by the TV application Jensen and his colleagues are responsible for. All content is delivered from this TV application, no matter whether you stream DR's programs from your mobile phone, your computer or your Playstation. In other words, it's the backbone of DR's TV streaming services. This means that an error-free, top-tuned TV application is a decisive factor in allowing DR to realize its ambition to deliver streaming services of the highest possible quality.

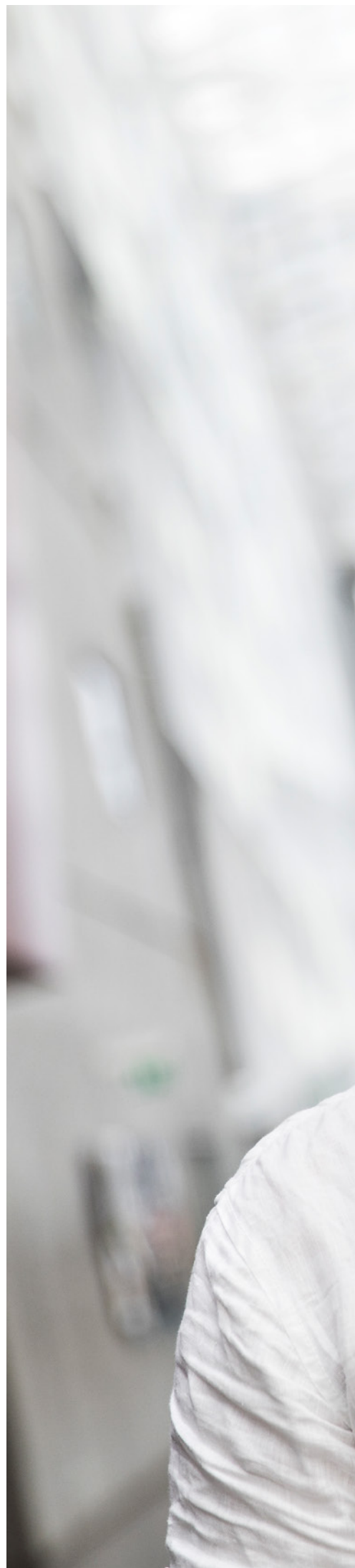
"When we talk about performance, we don't differentiate between clients such as mobile and browser. The TV application is what's decisive in determining what kind of experience you get on the service you're using," explains ProData

consultant Sebastian Ostfeldt Jensen, one of the quirky brains on the development team whose job is to make sure that the app lives up to viewers' expectations.

SMALL IMPROVEMENTS, HIGH QUALITY

The developers are constantly finding ways to adjust and optimize the app. While many of the improvements aren't strictly necessary to provide good services, 'good' is not good enough from DR's ambitious perspective. So the development team takes a proactive approach, constantly finding refinements to improve the user experience. And improving the TV application is a question of making lots of small adjustments. For example, the team improved performance significantly by restructuring the API which communicates with the services: Before, there was a single API which had to send a very large amount of content to the streaming service player pages, which was impractical. In the new solution, the developers have split up the calls to the API, which gives better response times when users access their favorite program. Jensen explains:

"The API would much rather have five separate calls asking for five separate things. This increases performance significantly, gives better response times and takes some of the load off the API."





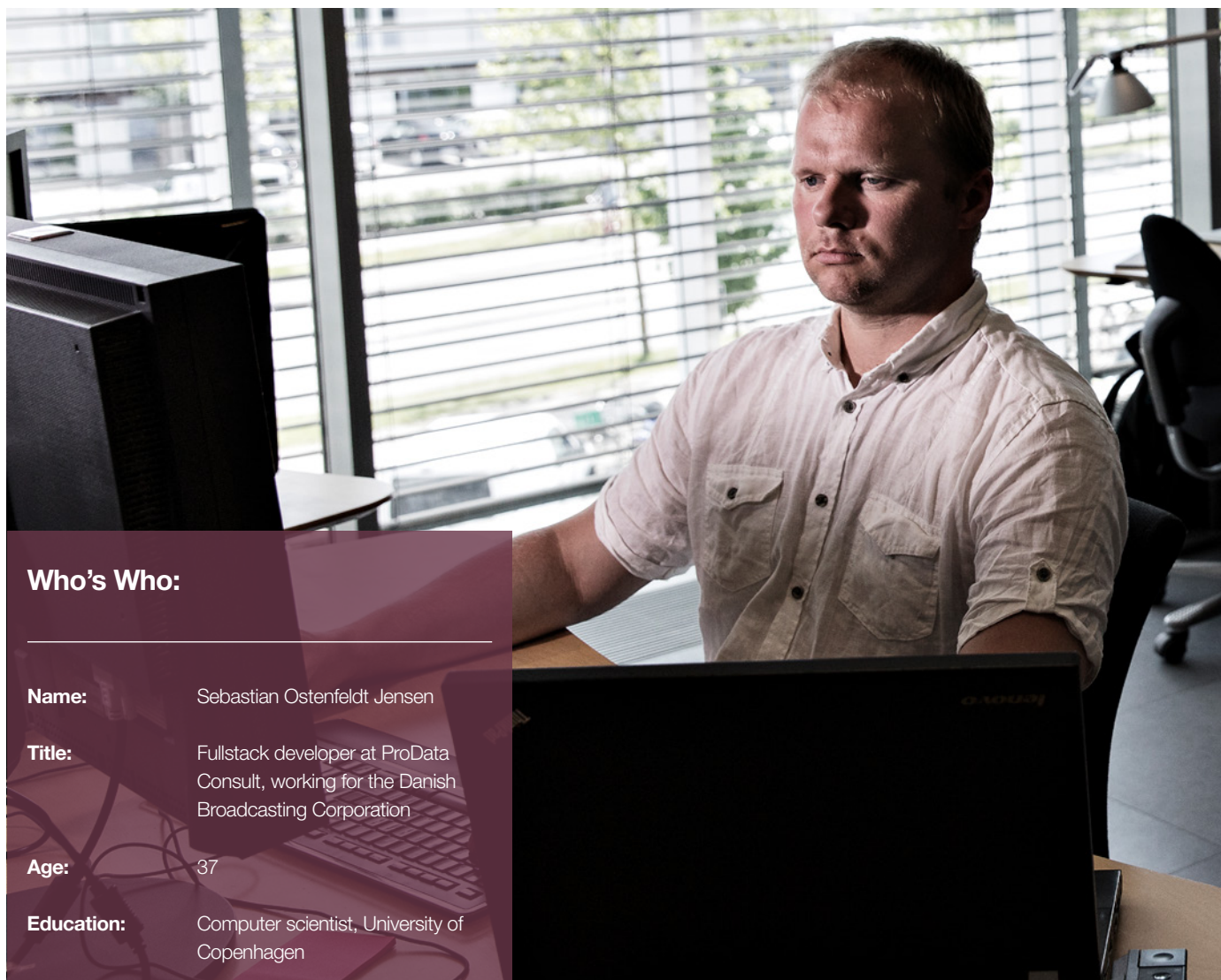
"The API would much rather have five separate calls asking for five separate things. This increases performance significantly, gives better response times and takes some of the load off the API."

*Sebastian Ostenfeldt Jensen,
Fullstack developer at DR*

There was plenty of room for improvement on the player pages, where users stream programs. For example, the way the lists of related and popular programs at the bottom of the player pages was displayed to users was suboptimal. Every time a user switched to a new player page, the application called the API to request data on related lists. But this was unnecessary, because this part of the page did not change.

Jensen and his team responded by redesigning the way the player pages load the lists of related programs. Their inspiration was a single page approach which only loads the content which changes, and which is standard in newer applications developed today. As Jensen explains it:

"To reduce the amount of content which is loaded when the user switches player pages, we added an ESI link to the player pages. The ESI link refers to a separate address where the lists of the related and popular programmes are located. The referrals make the content load faster and improve response times, because the new ESI link works together with Varnish, DR's cache server."



Who's Who:

| | |
|-------------------|---|
| Name: | Sebastian Ostenfeldt Jensen |
| Title: | Fullstack developer at ProData Consult, working for the Danish Broadcasting Corporation |
| Age: | 37 |
| Education: | Computer scientist, University of Copenhagen |

STAND-ALONE TROUBLESHOOTING APP

To measure response times, DR uses a variety of tools to monitor the performance of the TV application. But these tools also help localize relevant errors and pinpoint potential improvements. Thanks to one of the monitoring tools, a developer on the team noticed response times which didn't live up to DR's level of ambition.

"The connection between the TV application and our internal server was interrupted, but we couldn't see what was causing the error or where it was," remembers Jensen.

To solve the mystery – and others that might arise in future – the ProData consultant developed a separate application with just a single function: to find the error. This is a simple application which simulates the way the TV application makes calls to the API and generates data for further analysis. Jensen says:

"What's smart about the application is that you can change the settings and simulate a variety of scenarios. In this way, we can learn more about when and where problems occur."

"What's smart about the application is that you can change the settings and simulate a variety of scenarios. In this way, we can learn more about when and where problems occur."

*Sebastian Ostenfeldt Jensen,
Fullstack developer at DR*

In collaboration with DR's DevOps team and the backend team, the developers regularly analyze

the data provided by the separate application – and fix the errors and make the improvements revealed by the analyses. Yet another concrete initiative that optimizes response times for the TV application.

Jensen enjoys having co-responsibility for improving the performance of the TV application. Most of us get irritated if we have to wait for our favorite series to start playing, and the consultant is no exception:

"I myself get super irritated when an app has long response times, so I find it very natural to contribute to making sure DR's viewers have the best possible streaming experience." ●

Most likely the best consultants

Do you need a
business or IT
consultant?



Receive CV

[Prodataconsult.com/IT](https://prodataconsult.com/IT)

ProData Consult delivers the most qualified business and IT consultants, with competencies ranging from software development to business management. We can provide you with quick access to expert consultants with the skills and cutting-edge knowledge your business needs – and at least five years of documented experience within a main field of expertise or primary competence. Always.

In fact, our IT consultants average over ten years of experience. Our consultants can assist you with over 4,000 different

business and IT specializations. Because we have specialists in handling virtually all types of business and IT projects for both the public and private sectors.

We always strive to handpick the right consultant and send a CV within twenty-four hours of receiving a request.

Read more at prodataconsult.com





MobilePay: Take your business to the next level with mobile payments

MOBILEPAY MAKES LIFE EASIER FOR PRIVATE INDIVIDUALS, WHO USE THE APP TO PITCH IN FOR OFFICE GIFTS AND PAY FOR FLEA MARKET TREASURES. BUT THE APP HAS ALSO BECOME A STRATEGIC TOOL FOR COMPANIES IN THEIR SEARCH FOR BETTER USER EXPERIENCES AND NEW BUSINESS MODELS.

Interview with Michael Schmidt Barsøe, Head of Mobile Payments at Danske Bank and Peter Gregersen, Lead User Experience Specialist at MobilePay.

In Denmark, MobilePay has become virtually synonymous with mobile payments, in the same way Google means internet searches and Kleenex means tissues. Over 3.5 million Danes have this easy-to-use payment app in their pockets. This wide distribution gives companies new opportunities: mobile payments can drive increased digitisation, better user experiences and new business models.

Today, over 45,000 Danish companies accept payment with MobilePay, and more are on the way. Because when it comes to digitisation strategies and new business models, mobile payment is a hot topic in the corner office. And rightly so, according to Michael Schmidt Barsøe, Head of Mobile Payments at Danske Bank:

“Mobile payment isn’t just a question of getting a new kind of transaction. It’s a means of improving your business, creating better user experiences and preparing yourself to become the winner of tomorrow.”

“Mobile payment isn’t just a question of getting a new kind of transaction. It’s a means of improving your business, creating better user experiences and preparing yourself to become the winner of tomorrow.”

*Michael Schmidt Barsøe,
Head of Mobile Payments, Danske Bank*

EASIER PAYMENT BRINGS IN NEW CUSTOMERS

Previously, payment was often viewed as a necessary evil for the customer. But mobile payment can play a positive role, as it can help a business stand out from the pack and create more value for both users and companies.

“It makes different kinds of customer experiences and new user flows possible, and the simple interaction via the mobile phone can be decisive for landing new customers,” explains Barsøe.

Mails with bank giro credits, digital identification confirmation, online banking and constantly entering passwords cause unnecessary inconvenience, which increases the likelihood that potential customers will abandon their online carts before making a purchase.

Mobile payments increase the likelihood that customers will complete their transactions, whether they're switching telephone subscription plans or their electricity provider.

"If I can save 500 kroner a year with just a few clicks, I'm more likely to make the purchase," says the Head of Mobile Payments.

But there are many other advantages to thinking mobile payments into the customer journey. Because in addition to giving customers a fast, simple method of payment, mobile payments can be a source of valuable information.

"It improves your ability to map your customers' consumption patterns. What they do, and why they do it," says Barsøe.

When a customer completes a transaction using a service like MobilePay, it becomes easier for a company to store a flow of information than is the case with traditional payment solutions – information which can be used to tailor services or products to particular users. In the words of Peter Gregersen, Lead User Experience Specialist at MobilePay:

"Mobile payments open up new possibilities, because the payment solution you use knows something about you, and you give your consent to put those data in play."

For example, this might mean that the customer avoids having to enter their name, address or preferred method of delivery when making online purchases – this information is already contained in the app. As a result, the transaction is faster and simpler, which increases the likelihood that the customer will make a purchase. Mobile payments bring customers closer to 'one click purchasing'.

But making the customer journey as short as possible is one thing. It's something else entirely to convince users that mobile payments are secure. Because even though MobilePay transactions are extremely secure, overly simple user interfaces can give users the opposite impression. Gregersen explains:

"It's an art to incorporate just enough friction to make the product feel secure and credible while sending users through quickly. This is an issue we're really focussing on."



Who's Who:

| | |
|---------------|---|
| Name: | Michael Schmidt Barsøe |
| Title: | Head of Mobile Payments, Danske Bank |
| Age: | 47 |
| Edu.: | Graduate Diploma in Business Administration (HD) in sales from University of Southern Denmark |
| | Certified in International Cash Management through ACT |

FACT BOX – MOBILEPAY

Danske Bank launched MobilePay in 2013. Today, MobilePay is an independent business unit which enters into partnerships with a variety of other banks. MobilePay's ambition is to offer users and companies a mobile payment platform which is widely used, user-friendly and focussed on constant innovation.

IN FIGURES:

- Over 3.5 million Danes have downloaded MobilePay.
- The second quarter of 2017 looks set to break a new record for MobilePay, with 60 million transactions completed using the app.
- The forecast for 2017 is over 220 million transactions – or 60 billion kroner transferred via the app.
- 39% of users consider MobilePay their most indispensable app.

INVENTING NEW BUSINESS MODELS

MobilePay is a hit for transfers between private individuals. But companies have yet to crack the code that will allow them to exploit the enormous untapped potential in the millions of Danish smartphones with MobilePay.

“There’s fertile ground for inventing new business models. For example the way newspapers collect payment for subscriptions, which involves bank giro credits and longer subscription periods today. But what if you want to buy a single article instead of an entire newspaper? Today, everyone in Denmark would be able to buy online articles with just a few clicks,” says UX specialist Gregersen.

"In the future, you'll be able to sit at a café, connect to WiFi, order from the menu and pay immediately – all from your mobile phone."

*Michael Schmidt Barsøe,
Head of Mobile Payments, Danske Bank*

Another example of how mobile payments can create new business opportunities is the collaboration between MobilePay and Scanomat, a Danish automated coffee machine manufacturer. The two companies have developed a joint app solution which lets you order and pay for your favorite coffee – without interacting with a barista. In short: the reinvention of the café.

THE FUTURE OF MOBILEPAY AND MOBILE PAYMENTS

Even though lots of creative applications for MobilePay have already been developed, we will be seeing even more innovative ways of using mobile payments in the future. Specifically,



Who's Who:

Name: Peter Gregersen

Title: Lead User Experience Specialist, MobilePay

Age: 37

Edu.: Master's degree in Information Studies and Business Economics, Aarhus University

MobilePay is working to make the app more intelligent. Gregersen explains:

“MobilePay has to understand the user better to meet the user's needs. The goal is for the app to become a personal assistant who helps you make payments even easier.”

At the same time, mobile payments can become an important element in the apps and digital interactions of the future, when your surroundings will have a greater influence on the possibilities your phone offers you. According to Barsøe, this development will harmonize well with MobilePay:

“In the future, you'll be able to sit at a café,

connect to WiFi, order from the menu and pay immediately – all from your mobile phone.” ●

Business consultants on time & material

- ✓ Gain access to a large network of the sharpest business consultants on the market
- ✓ Consultants who are capable of linking business, processes and IT together
- ✓ Consultants with an eye for the strategic and tactical level
- ✓ We send 1-3 CVs within 24 hours

ProData Consult insist that our business consultants have an up-to-date, tried-and-tested toolbox – and take a pragmatic, solution-seeking approach to delivering real results. The consultant must also have experience from the industry the client operates in.

Contact us at
tel. +45 4343 1171
for more information.

We specialize in finding business consultants for:

The financial sector
The energy sector
The transport and logistics sector
The telecommunications and IT industry

ProData Consult
Information Technology and Services
501-1000 employees

2,611 followers Follow

Home

ProData Consult
Expert Business & IT Consultants

The strongest Business & IT Consultants with competencies ranging from software development to business management. Find your Business or IT Consultant at ProData Consult.

At ProData Consult, you'll have easy access to the market's most sought-after Business and IT experts, each with impressive core competencies, cutting edge know-how and more than 5 years of proven experience.

Individually, our consultants offer an average of 10 years' experience and together, they cover more than 4,000 unique competencies. That makes ProData Consult your go-to source for Business Consultants and IT specialists, for virtually any type of project in the public or private sector.

Expert Business & IT Consultants

- Personal consulting service, matching you and your project with the right consultant
- Flexible models of cooperation that make it easy to become and remain a client
- Transparent fixed-price models and consultants on a time and material basis
- More than 10,000 senior Business & IT consultants with 5+ years' experience
- Unique national and international network

Specialties
Expert IT Consultancy Services within all fields of IT: IT Consultants, Program- and Project Managers, Visual Designer/UX, Scrum Masters, Infrastructure consultant, Developers, Tester and Test Managers, Web- and App developer, Database administrator

ProData Consult employees

Toine van Kastel
Country Manager

See how you're connected

ProData Consult Showcase Page

ProData Consult
Information Technology...
501-1000 employees

For Consultants - ProData Consult
591 followers
Follow

Help recruiters find you
Members with a position get 3 times

Follow news, events and articles on LinkedIn

Check out our LinkedIn page for clients and click 'Follow' to stay up-to-date on exciting articles, seminars, client events and other news.



Snow Patrol

a Danish app with Polish impact

AT PRODATA CONSULT'S NEARSHORING CENTER IN WARSAW, TWO PRODATA CONSULTANTS HAVE DEVELOPED AN INTELLIGENT APP IN COLLABORATION WITH LE34 THAT LETS THE DANISH MUNICIPALITIES TRACK SNOW REMOVAL LIVE DURING THE WINTER MONTHS. IN THIS INTERVIEW, THE DEVELOPERS EXPLAIN HOW THE CHOICE OF DATABASE AND PROGRAMMING LANGUAGE WAS DECISIVE FOR THE CREATION OF A SUCCESSFUL APP.

Interview with Michał Stawarz and Przemysław Pańczyk, app developers at ProData Consult, working for LE34.

In collaboration with their client LE34, iOS developer Michał Stawarz and Android developer Przemysław Pańczyk have developed Snow Patrol, a brand new app. The app is designed for Danish municipalities and their employees to enable them to track the progress of snow ploughs live in connection with snow removal work in the winter months. With the new Snow Patrol app, the municipalities can get live data on the snow ploughs, which makes administrative coordination simpler and more efficient. At the same time, it gives drivers a quick, easy overview of their snow removal routes and lets them document their work in relation to the municipality. The entire foundation of the app is based on live data.

From ProData Consult's Nearshoring Center in Warsaw, the two Polish developers were given responsibility for the app project – from idea to finished project – in mid-2016. And even though a Snow Patrol app already existed at the beginning of the project, the developers quickly realized that starting over was the smartest move for the client.

"The existing app was created a few years ago, which was

a burden as the technology already was outdated. To understand the product better, we performed a code analysis that indicated the project would gain a lot from deep code refactoring. However, that process would be extremely time consuming and wouldn't guarantee the stability and safety that we wanted to achieve," explains Stawarz.

Not only was starting over the best choice in relation to the quality of the project, the two developers also agreed that it would also be more efficient.

"Making the necessary improvements to the existing app would take much longer than building a new app from the bottom up. So we recommended starting the new project from scratch," says Pańczyk.

LE34 backed up their recommendation, which meant that the two developers were given the green light to start the project. And less than three and a half months passed from project initiation to the presentation of the finished app, which meant that the app was ready to be used in the winter of 2016/17.

PUT YOURSELF IN THE USER'S PLACE

To get the project off to a good start, the app developers began by laying a firm foundation of preparation. Precisely the initial phase of a project is decisive to its success, according to the two developers. In particular, they spent time and energy on putting themselves in the place of the user and the business, because it was crucial to understand the client's requirements and expectations of the app, in addition to the use scenarios the app would be functioning in.

"Making the necessary improvements to the existing app would take much longer than building a new app from the bottom up. So we recommended starting the new project from scratch."

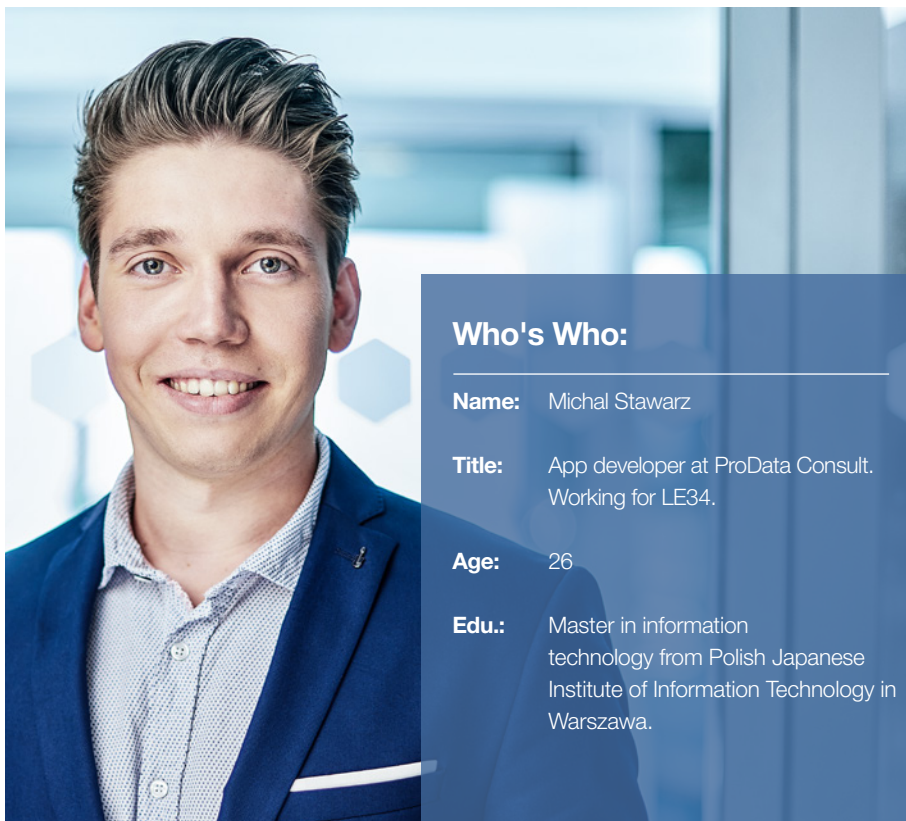
Przemysław Pańczyk, App developer

"We had to understand what situations the app would be used in, and how to take that into account in the development process," explains Stawarz.

THE CONSULTANTS' PERSPECTIVE ON COLLABORATION ACROSS BORDERS

Both Michał Stawarz and Przemysław Pańczyk have been working for and in collaboration with LE34 as consultants through ProData Consult for some time. During this time, they have learned a lot about how to develop the optimal collaboration with a client/employer located in another country. We've gathered their best advice here:

- 1. Getting started** – The beginning of a new project is crucial to its success. Take the time to talk through the goals of the project and brainstorm together about ideas and possible solutions to the challenges of the project.
- 2. Understand the business** – It's important for the developers to understand the business and how it operates. A thorough introduction to the business gives the developers a better foundation for providing the right input and making the right choices in the development process.
- 3. Communication** – Make sure that it's possible to communicate on a daily basis. Use one of the available systems, like Slack or Hangout. Categorize conversations by subject, so that everyone knows what information is relevant for them.
- 4. Documentation** – It's a good idea to write down requirements and expectations to give the developers something concrete to relate to. It's also a good idea to make sure to provide good documentation to whoever will be taking over the work later.
- 5. Don't make assumptions** – Make sure to align your expectations with the developers, and don't make assumptions on each other's behalf.



Who's Who:

| | |
|---------------|--|
| Name: | Michał Stawarz |
| Title: | App developer at ProData Consult. Working for LE34. |
| Age: | 26 |
| Edu.: | Master in information technology from Polish Japanese Institute of Information Technology in Warszawa. |

And it was precisely the process of understanding the user and the business which led the two Polish developers to two important conclusions which were decisive for the app's technical requirements. The most important conclusion was that the snow ploughs often worked in areas with low or no internet connectivity. This meant that in order for the app to become a success, it was absolutely necessary for it to be able to report live data even in situations with bad or no internet connectivity – otherwise, it would be useless.

The preparatory phase also revealed that the app would be used while the driver was sitting in the snow plough. This meant that it had to be easily accessible, quick to use and extremely simple – which put demands on UX and UI. Pańczyk explains:

“The user couldn't spend too much time using the app. It had to be simple and easy to use. The less time the user spends on the app, the more he or she can focus on the work.”

THE CHOICE OF DATABASE WAS THE KEY

The largest challenge in getting the app to operate as intended was making sure that data would be stored in spite of a bad internet connection. This meant that the developers

had to find a solution which could compensate for a bad connection. The choice fell on a Realm database solution. A solution which unlike traditional server-side databases, can be used directly in an iOS or Android app. This makes it possible to store data and queries locally on the device.

“With Realm, we could solve the biggest challenge with the app and ensure that data was stored safely and consistently, even without an internet connection,” explains Pańczyk:

SWIFT

- Swift is a programming language developed by Apple for creating apps for iOS, Apple TV, Apple Watch and Mac programs
- SWIFT was introduced in 2014
- Most recent version launched is SWIFT 3.1.1

“All you need is a GPS. The app continually collects data from it and stores it until it becomes possible to synchronize. The Realm database will contain the data until the connection allows the app to synchronize with the backend.”

And even though Realm is not the most obvious choice, as it is not based on SQL, it provided the developers with a common platform – because Realm is compatible with both iOS and Android.

“When developing an app, you want to use tools that are compatible with both iOS and Android. And Realm is. When we implemented something on one platform, we could quickly and easily transfer it to the other platform. This made the development process more effective,” explains Stawarz.

BASED ON STATE-OF-THE-ART TECHNOLOGY

The app developers wanted to base the code for the app on new, state-of-the-art programming languages – not only to improve quality, but also to future-proof the app. With these considerations in mind, they chose Apple’s programming language Swift for iOS, and the programming language Kotlin for Android.

For Pańczyk, who was responsible for the Android development, Kotlin was an obvious choice, despite being a relatively new programming language:

“Kotlin is a state-of-the-art programming language which is based on and 100% interoperable with Java. Programming on Android with Java only allows us to use features available in Java 1.7, while using Kotlin opens up to Java 1.8 and much more.”

As a result, Kotlin gave the developers more options. The new programming language was also developed with Android in mind, which meant it was an obvious choice for the project. So despite having to work with version 1.0 of the language, which meant that the Android developer had to figure out some ‘work arounds’ in the course of the project, the advantages of Kotlin definitely outweighed its limitations.

And according to the Michał Stawarz, the choice of Apple’s own programming language Swift for the project was motivated by many of the same considerations:

“With Swift, you get access to new language features that has not been available in its predecessor - Objective-C. The language puts emphasis on strong typing that makes code safer and helps unveil code issues earlier. Another great thing is that Swift evolves constantly by incorporating new ideas.”

But the constant development of Swift also presented challenges. Occasional language updates can cause the existing Swift code base to become outdated, requiring additional work from the developers.

“When choosing Swift, you have to make sure that you understand how evolving the language is at the time. With each major update, you will have to spend some time to refactor your code to keep it in line with the current syntax. However, breaking changes are less frequent now as the language becomes more mature.”

And although both languages are relatively new and untried, both developers see them as having such major advantages that they would make the same choice again:

“The example of the Snow Patrol app proves, that going with new technologies does not have to be seen as a threat to stability

KOTLIN

- Kotlin 1.0 was introduced on 15 February 2016
- JetBrains is the company behind Kotlin
- Kotlin is 100% interoperable with Java
- Most recent version launched is version 1.1.2

or quality of the product. The described technology stack, helped us deliver an app that is safe, future-proof and brings great value to both LE34 and their customers”, concludes Stawarz. ●



Who's Who:

Name: Przemysław Pańczyk

Title: App developer at ProData Consult. Working for LE34.

Age: 26

Edu.: Master in Mobile Networking from Polish Japanese Institute of Information Technology in Warszawa.



AFTER 15 YEARS WITH APPS STILL BASED ON THE SAME LOGIC

THE PAST FIFTEEN YEARS HAVE SEEN A QUANTUM LEAP IN WHAT WE CAN DO WITH MOBILE PHONES AND APPS. BUT EVEN THOUGH THE POSSIBILITIES OFFERED BY MOBILE APPLICATIONS HAVE EXPLODED, AND THE RANGE OF TECHNICAL OPTIONS IS LARGER THAN EVER BEFORE, THE FUNDAMENTAL APPROACH AND LOGIC BEHIND PROGRAMMING AN APP IS BASICALLY THE SAME.

Interview with Jørgen Staunstrup, PhD in computer science and external lecturer at the IT University of Copenhagen (ITU).

“Back in 2002, we were already teaching students how to develop mobile applications,” remembers Jørgen Staunstrup, who has been affiliated with ITU for over fifteen years. He pulls an old programmable Nokia phone out of his pocket, points at it and continues:

“Back then, there were already a lot of innovative ideas about what kinds of applications and software we could stick into a phone like this one. And even though the

results were rather different than what we see today, the principles behind the programming were the same.”

At the beginning of the millennium, putting software in mobile phones and developing smart applications was already very advanced. At the IT University, one strong source of curiosity about mobile applications was the progress which was taking place in countries

like Japan, where a lot of experimentation with apps was taking place. But even though the technical and technological conditions were in place, the major breakthrough for mobile apps would be some time in coming.

“The lid never came off the pot. The companies were trying to drive the development and progress of the mobile apps themselves internally. This meant that development never really got off the ground,”

says Staunstrup, who explains that it wasn't technology or insufficient skill on the part of the programmers that prevented the breakthrough of mobile applications. Rather, it was the absence of an ecosystem that could help innovation thrive by creating a larger network where participants could interact.

IT ALL TOOK OFF WITH APPLE

The breakthrough of mobile applications finally happened when Apple took the plunge in 2007. Apple was the first to introduce an ecosystem involving external participants who could use Apple's platform to develop their own applications on the basis of their own business models. And according to Staunstrup, this is precisely what needed to happen to pave the way for mobile applications:

"Suddenly it became possible for more people to develop apps. And that's when ideas about how to exploit mobile applications exploded – companies already had the programming expertise they needed."

And in addition to creating an ecosystem which made it possible for multiple players to develop mobile applications and base businesses on them, Apple also created a piece of hardware (the iPhone2) which made operating the phone and its applications simple and user-friendly. These two factors,

combined with their approach to design and usability, account for Apple's massive conquest of the mobile market.

Since then, Google has joined the field and has created a huge success with a more multifaceted concept: Android. At the same time, since 2010, social media have made their influence felt, and have had a huge effect on how we use mobile applications, driving a transition from computer to mobile devices. And at the same time, there has been an enormous technological development in the hardware of mobile devices.

THE SAME CHALLENGES FOR DEVELOPERS

Thanks to new business models, new concepts and new technology, the possibilities offered by mobile phones have taken a quantum leap over the past fifteen years.

Technological developments in particular have created entirely new possibilities for everyday mobile applications. For example, camera and GPS have not only broadened the horizon for what mobile applications can do, they have changed what developers can do as well.

"It's very much the hardware that becomes the driver for what developers can do in terms of programming. Because the ideas were there all along," explains Staunstrup:





Who's Who:

| | |
|-------------------|---|
| Name: | Jørgen Staunstrup |
| Title: | External lecturer, IT University of Copenhagen |
| Age: | 65 |
| Education: | PhD in computer science from the University of Southern California |

"Back in 2002, we were already working on a mobile application that could determine where you were. Back then it was just based on radio masts, not on GPS like today."

So even though using a mobile application today is a completely different experience from the user perspective than ten years ago, for a developer, programming an app requires basically the same approach and logic. According to Staunstrup, to program apps, you need to be able to do basically the same things today as in the early days.

"The basic principles behind programming apps are the same. What we teach our students today is basically the same as fifteen years ago."

This is primarily due to the fact that programming languages are more or less a constant. When ITU began working on mobile applications back in 2002, they used Java. And Java is still one of the most widely used programming languages in the world – which also goes for apps. And although programmers experiment with new

languages, and new concepts and functionalities are added to the existing programming languages, none of this radically alters the fundamental challenges or the approach programmers need to take in order to program an app.

"If the same technological possibilities had been available back in 2002, the programmers of that time could definitely have developed some of the applications we see today," says Staunstrup."

Jørgen Staunstrup, External lecturer, IT University of Copenhagen

"If the same technological possibilities had been available back in 2002, the programmers of that time could definitely have developed some of the applications we see today," says Staunstrup.

A FUTURE WITHOUT MOBILE PHONES

The technological possibilities offered by mobile applications and devices will continue to change rapidly. Staunstrup predicts that the mobile phones and mobile applications we know today will become obsolete. In the future, we will use our surroundings to interact digitally to a higher degree, and the interaction itself (for example, screens and buttons) will no longer be part of a 'gadget' we carry around with us. A kind of interactive reality.

And although this might sound somewhat technical, for developers, there is nothing truly groundbreaking in this scenario. The approach and the logic behind programming the applications which will create the framework for this interaction will remain the same.

"What we'll be seeing in the near future won't create radical changes in the approach developers need to take to programming mobile applications either," concludes Staunstrup. ●



Is your IT department ready for an adventure abroad?

In Poland you get:

- ✓ Fast and agile expansion of your development team
- ✓ High quality development resources and IT consultants
- ✓ Advantageous prices and transparent expenses
- ✓ Short travel distance

Easy access to high quality IT resources

Poland is an obvious choice, when moving your IT activities abroad. Here you get access to a large volume of well-educated IT resources, who is able to deliver quality and results according to Scandinavian standards. A large volume of IT experts makes it possible to scale the number of IT resources in a flexible manner and at a lower cost.

ProData Consult A/S
Stamholmen 157
2650 Hvidovre
Denmark
info@prodata.dk
+45 43 43 11 71

ProData Consult sp. z o.o.
ul. Domaniewska 39a wejście B
02-672 Warszawa
Poland
+48 22 499 00 80



ProData
consult
LEARN MORE AT:

WWW.PRODATACONSULT.COM/NS

Most likely the best consultants

Do you need a
business or IT
consultant?



Receive CV

Prodataconsult.com/IT

ProData Consult delivers the most qualified business and IT consultants, with competencies ranging from software development to business management. We can provide you with quick access to expert consultants with the skills and cutting-edge knowledge your business needs – and at least five years of documented experience within a main field of expertise or primary competence. Always.

In fact, our IT consultants average over ten years of experience. Our consultants can assist you with over 4,000 different

business and IT specializations. Because we have specialists in handling virtually all types of business and IT projects for both the public and private sectors.

We always strive to handpick the right consultant and send a CV within twenty-four hours of receiving a request.

Read more at prodataconsult.com

ProData
consult

