

DS PT Meetup #17

A quick view on the
analytical metamorphosis
of a Telecom Operator



Nuno Paiva

Head of Consumer Analytics



More than 8 years working in Telecom, focusing on Marketing & Customer Value Management, and has also worked previously at Accenture as a Senior Consultant.

At the moment he leads a Data Ninjas team that are enabling NOS to make better decisions using the latest analytical artillery.

Nuno holds one MSC in Eletrotechnical Engineering (University of Coimbra) and another Msc of Data Analytics (University of Porto).

Nuno Cravino

Lead Data Scientist



In his first journey into the corporate world after a few years doing learning, researching, and working inside academia and start ups as a statistician/computer scientist/database designer.

Nowadays he focus mainly in the development and operationalization of statistical/mathematical models predicting expected behavior and consumer characteristics.

Nuno holds a BSc. In Philosophy (University of Oporto), a BSc. In Computer Science (University of Oporto), and concluded post-graduated studies in Computational Statistics (Universidade Aberta).

1

NOS

2

Analytics & the Digital Transformation

3

Consumer Analytics Team

4

How we do things



Organization



Executive Team



Miguel Almeida
CEO NOS

Pelouros: Secretaria Geral | Jurídico e Regulação | Comunicação Corporativa e Sustentabilidade | Desenvolvimento Negócio e Internacional | NOS Madeira | NOS Açores



José P. Costa
Vice-presidente/CFO

Pelouros: Administrativa e Financeira | Corporate Finance | Planeamento e Controlo Gestão | Auditoria Interna e Gestão de Risco | Relação Investidores | Compras | Cinemas | Audiovisuais | Publicidade



Ana Paula Marques
Administradora

Pelouros: Recursos Humanos | Marca e Comunicação | Serviço ao Cliente | Logística e Gestão de Terminais | Gestão de Ativos e Serviços Gerais | Processos | Market & Customer Intelligence | NOS Luxemburgo



Luís Nascimento
Administrador

Pelouros: Produto móvel e convergente | Produto Fixo | CRM | Vendas Particulares | Conteúdos



Manuel Ramalho Eanes
Administrador

Pelouros: Corporate | Vendas Grandes Empresas | Vendas PME | Soluções Empresariais | Marketing Empresas | IT Service Management | Wholesale | Informação Empresas & Operadores

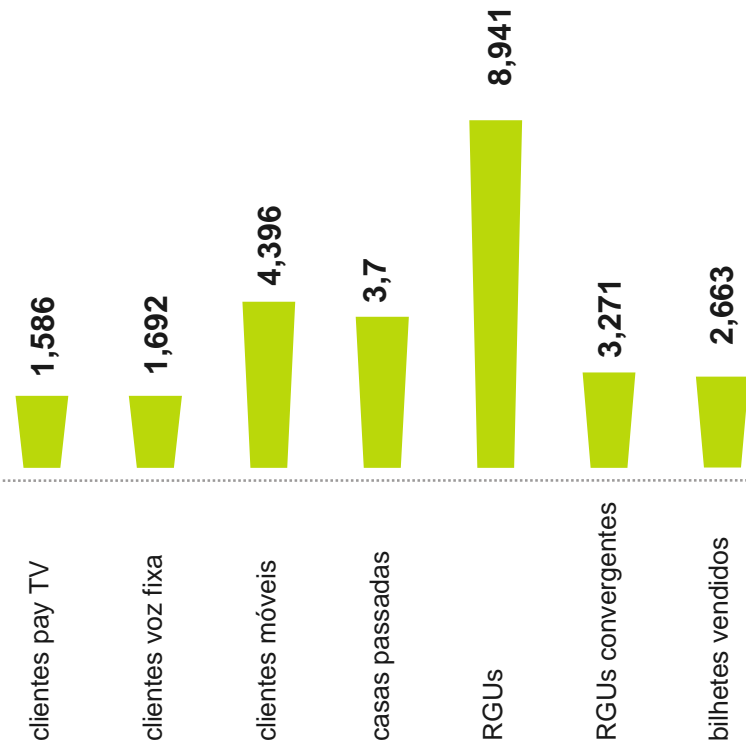


Jorge Graça
Administrador

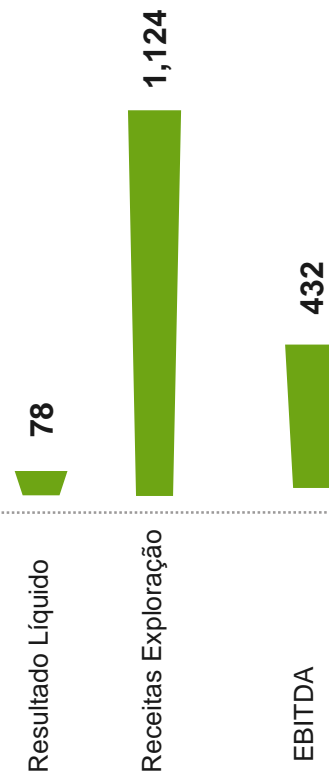
Pelouros: Engenharia e Desenvolvimento de Rede e Infraestruturas | Plataformas de Serviço | Data Center | Operação e Supervisão | Sistemas de Informação | Desenvolvimento de Produto

Main Figures (3rdT 2016)

Customers (millions)



Results (millions €)



Market Share Leadership

Pay TV 44%

Cinema (Revenue) 65 %

Cinema Distribution (Revenue) >60 %

An Inclusive Brand



Innovation in its DNA

1. Smart TV



- UMA is the 1st TV European product with deep personalization experience, available on multi-screen with voice control/app interaction.

2. Augmented Reality



- 1st Operator in Portugal to deliver TV Contents in Augmented Reality through Hololens & NOS TV App

3. Innovation Awards



- Awards top innovation projects providing visibility and network opportunities.

Awards



Iris



Iris Online



NOS Cinco



NOS Quatro Light



Cine Top

02

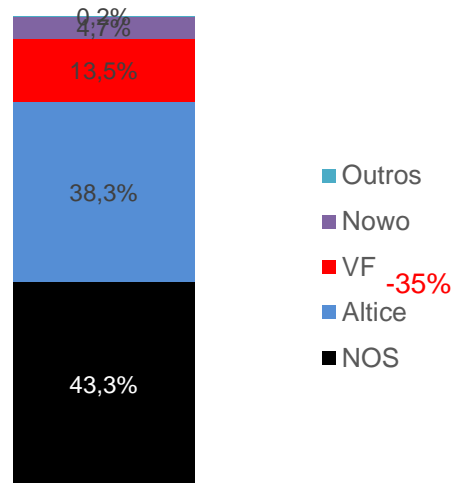
Analytics & the digital Transformation

PORTUGUESE MARKET

Although we're leaders in TV, and market is still growing, with the digital revolution there are challenges ahead.

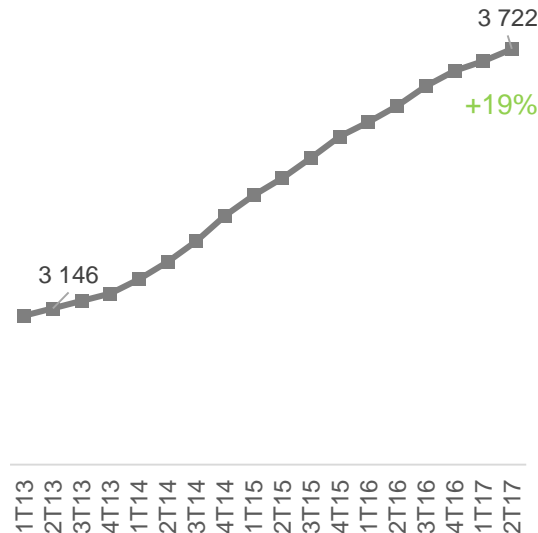
WE'RE IN A LEADERSHIP POSITION...

Pay-TV Market Share



AND MARKET IS STILL GROWING...

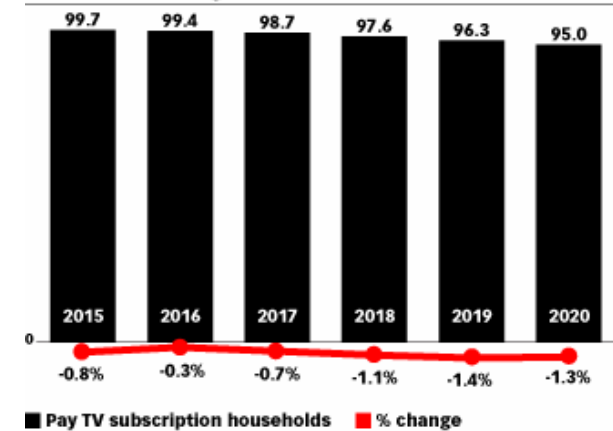
Total Subsc Pay TV- Portugal



BUT HOW IT'LL EVOLVE?

US Pay TV Households 2015-2020

millions and % change



Note: payTV households are those with a subscription to traditional payTV services; excludes IPTV and pure-play online video services (e.g., Hulu, Netflix, Sling TV, YouTube, etc.)
Source: eMarketer, Jan 2017

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www.eMarketer.com

“THE GREAT GAME – POSITIONS, ROLES & STRATEGIES

Telecos are redefining their role in the Digital value chain, data monetization is one way...

	Devices, OS, Apps & S/w	Data Connectivity	Online Advertising	O/L Sales 3 rd Party Goods	Online Sale of Content	Payments	Enterprise Cloud	Voice & Messaging	
Value 2014*	1,000	1,000	100	500	100	50	50	1,000	
Telcos	Synergic business	Core business	Enabler of SBG	An enabler of	Enabler of SBG	Synergic business growth	Revenue growth	Core business	
Amazon	Synergic bus. growth	Enabled by		Core business	Revenue growth				
Apple	Core business		Revenue growth	An enabler of	Synergic business			Synergic business growth	
Microsoft/ Skype					Synergic business growth		Revenue growth		
Google/ Motorola			Core business				Synergic bus. growth		
Facebook			Enabled by					Revenue growth	
Generic telco strategy	Partner	Enable			Compete	Defend			

Fonte: <http://www.telco2.net/blog/>



POSSIBLE GROWTH APPROACHES

For any growth option it's easy to find out opportunities that will be fueled by analytics.

- “Improved segmentation (potentially using analytics to enable price discrimination)”

1 **Connectivity**

- Subscriber growth
- ARPU growth
- Connectivity for IoT

2 **Extensions to core services**

- TV/video content (AT&T)
- Smart home (SK Telecom)

- “Decreasing churn by bundling services, notably by associating higher churn services with lower churn ones”

3 **New opportunities**

- Security (Singtel)
- Advertising (Verizon)
- IoT beyond connectivity (Vodafone)

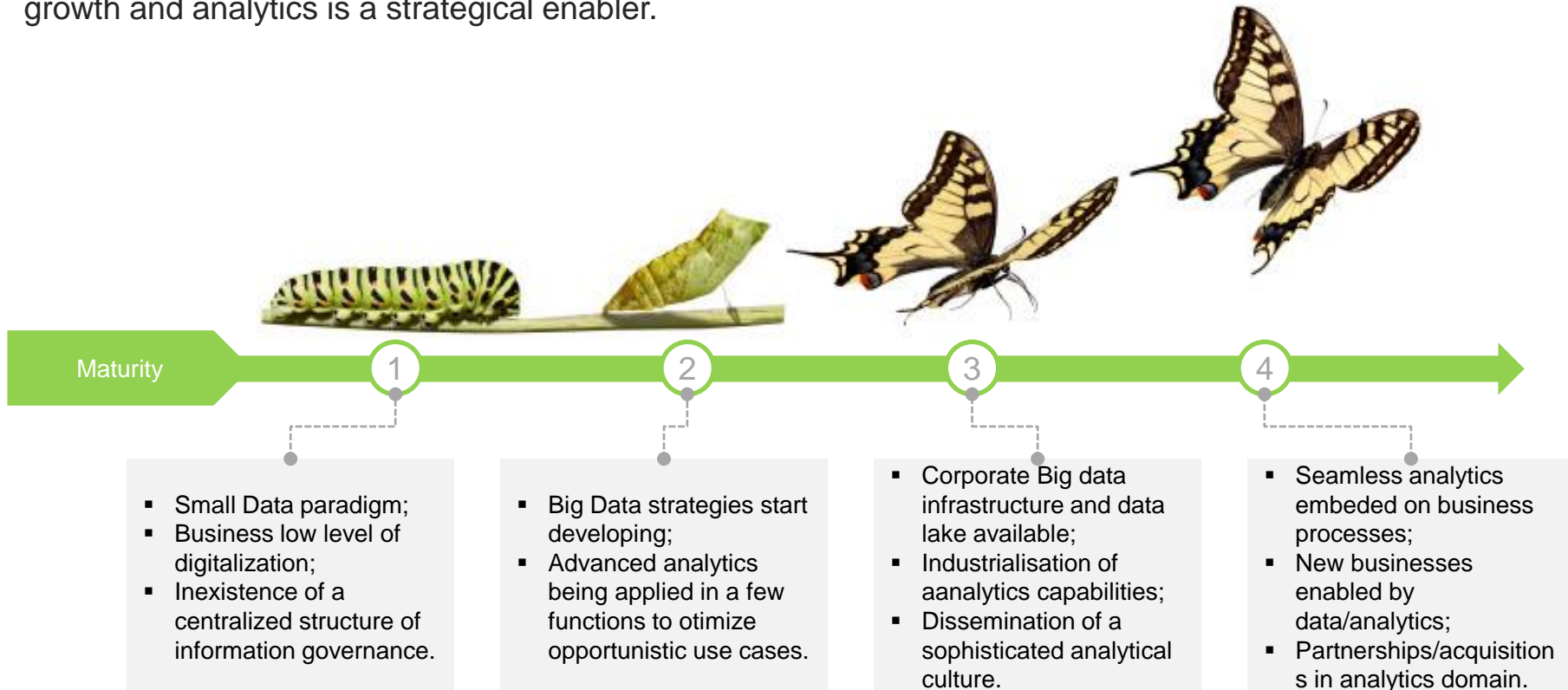
4 **Venture capital investments**

- Seed funds (Telefónica)
- Early stage venture capital investments (Verizon)

- Precision marketing insights is a sophisticated Data Product that helps businesses to understand target audiences.

THE ANALYTICAL METAMORPHOSIS

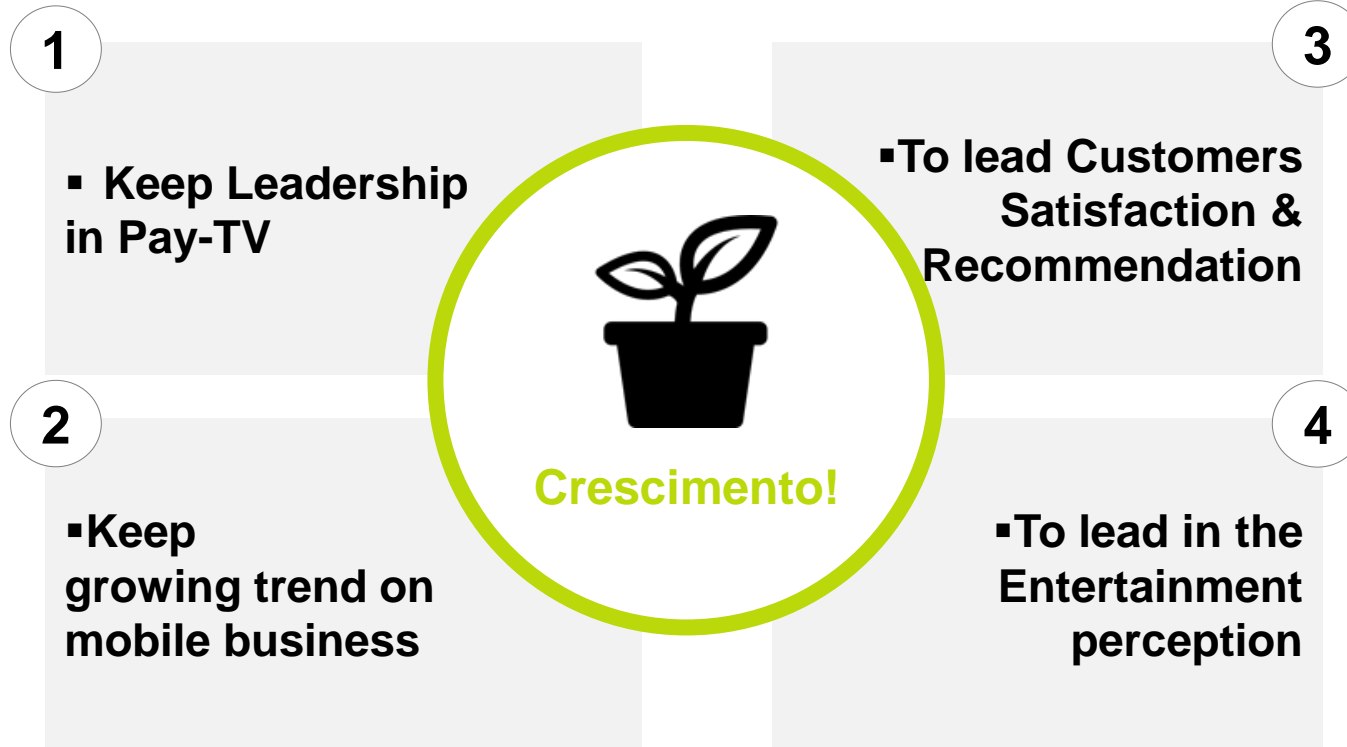
The competitive arena is very dynamic and it overlaps with full digital players, digital transformation is imperative to keep growth and analytics is a strategical enabler.



03

Consumer Analytics Team

NOS GOALS





1 Analytical DNA



Nos Stock Trend

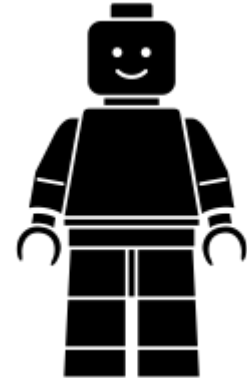
- Our performance and result delivery is based on a strong analytical Culture.

2 We've (Super Interesting) Data!



- Data is a strategic asset which we curate and nurture;
- We've it in tons and unstructured!

3 We've the Toys!



- We've a full stack of fresh Big Data technologies to tackle all data challenges.

HOW CAN WE PLAN AND BUILD A BETTER ANALYTICS PRACTICE?

Tecnologia

- Disponibilidade de tecnologias para produção (ex: modelação preditiva), distribuição (ex: ferramentas de BI reporting) e operacionalização de analytics (gestão campanhas multi-canal e interface com apoios à venda).

Processos

- Existência de processos para priorizar projetos de Analytics e depois gerar, disseminar e aplicar nos touchpoints Cliente insights produzidos.

Metodologias de Analytics

- Avaliação da variedade e aplicabilidade das técnicas descritivas e preditivas utilizadas. Identificação dos modelos de avaliação financeira dos projetos de Analytics.

Estratégia

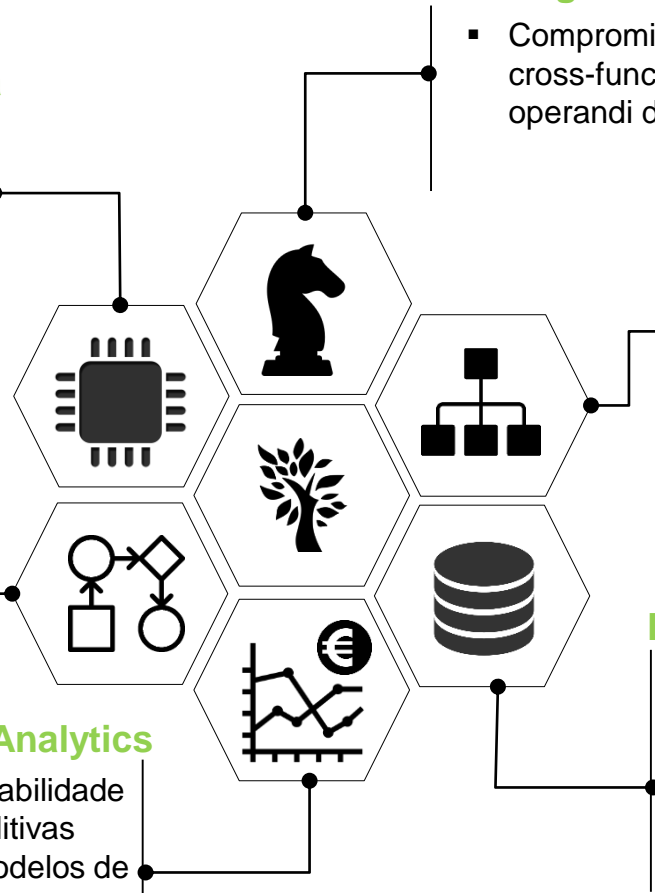
- Compromisso estratégico em BI: tático local vs corporativo cross-funcional. Abrangência, centralidade e modus-operandi da aplicação de BI no negócio.

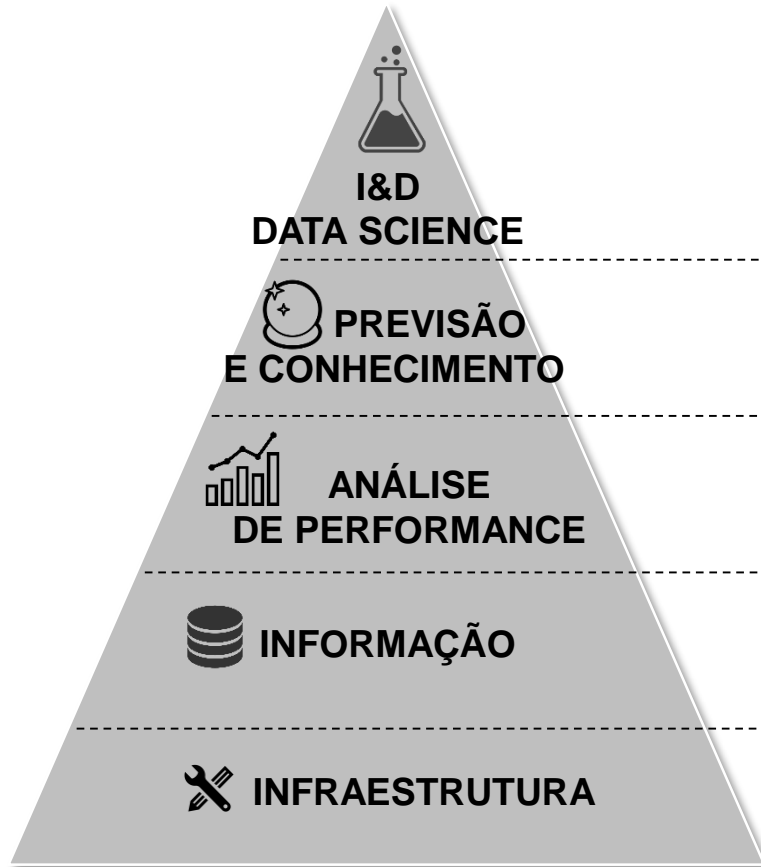
Organização

- Recursos com skills adequados para desenvolvimento de BI. Estabelecimento de parcerias internas ou externas, para preenchimento de gaps de capacidade. Estrutura organizativa suporta desenvolvimento e disseminação da prática.

Informação

- Roadmap de desenvolvimento de novas fontes de informação com valor. Capacidade de gerir diferentes fontes de dados – não estruturadas, velozes, etc. Existência de governance de informação.





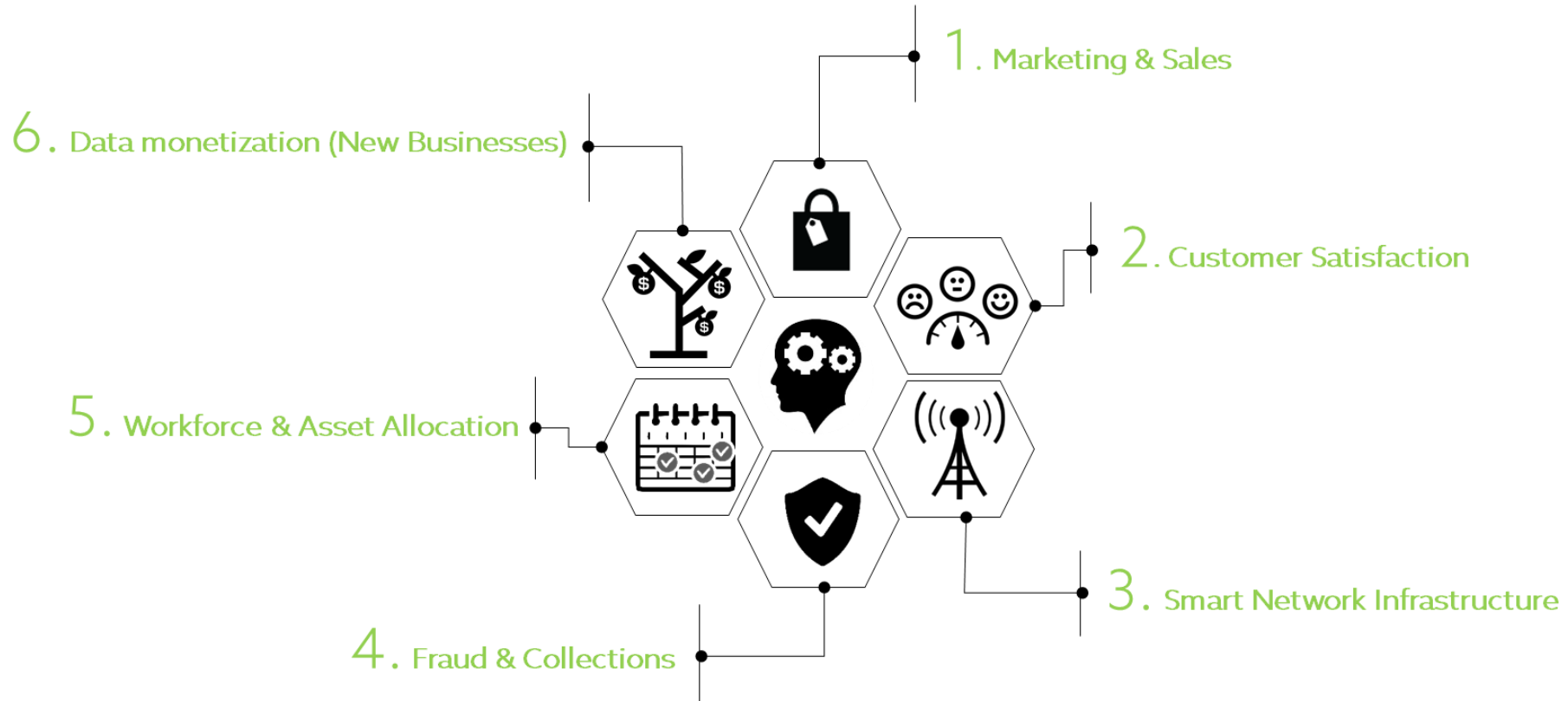
5. Desenvolver abordagens específicas recorrendo a tecnologias de Big Data e Machine Learning para endereçar **use cases complexos** com informação volumosa, pouco estruturada e rápida, em modelos de **parcerias com a Academia**

4. Compreender a base de Clientes, prescrever ações/produtos, resolver problemas de otimização criando impacto no negócio, de forma industrializada, com apoio em técnicas mainstream de analytics.

3. Acelerar operações de angariação, x-sell/upsell e retenção através de iniciativas proximidade analítica - dashboarding e agilidade na análise e recomendação;

2. Garantir produção de informação estruturada para consumo dos end users e estabelecer plano para incluir novas fontes de informação com potencial de monetização.

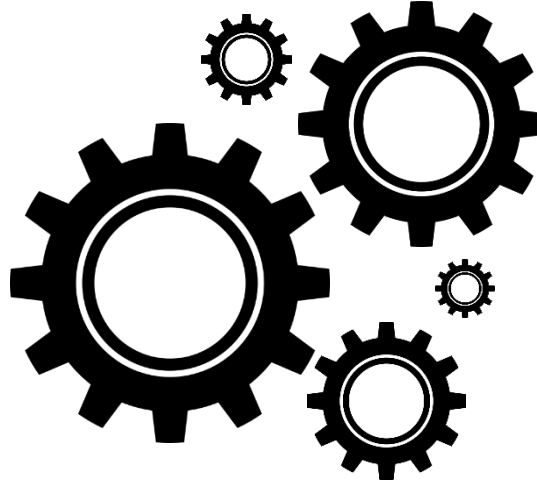
1. Estabelecer roadmap de evolução da arquitetura que promova o self-service/agilidade dos utilizadores, gerir as plataformas garantindo uma operação fluída em todo o stack - implementar políticas de segurança, gestão de acessos, quotas, updates, monitorização de performance, etc.



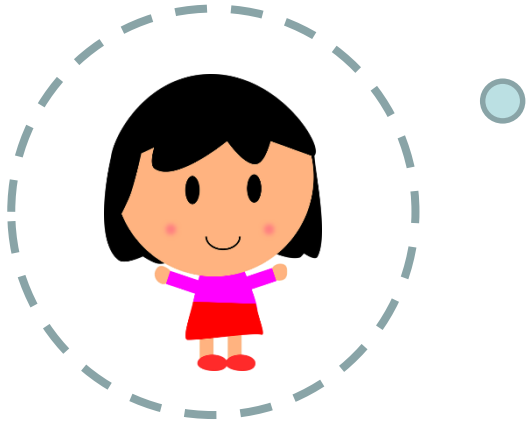
04

The Consumer Analytics Machine

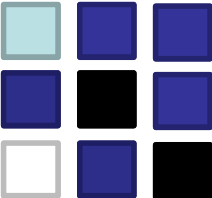
The Consumer Analytics Machine



A.K.A. what do we do all day...



The Customer



Product line



Communication Channels

Network Ops

IT

Innovation

CRM

Logistics

Sales

Product

Network Ops

IT

Innovation

CRM

Logistics

Sales

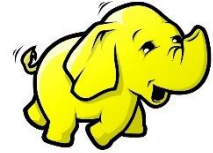
Product

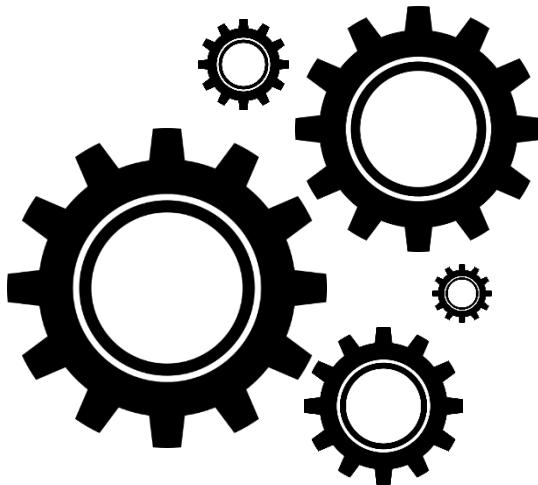
CRM Overview

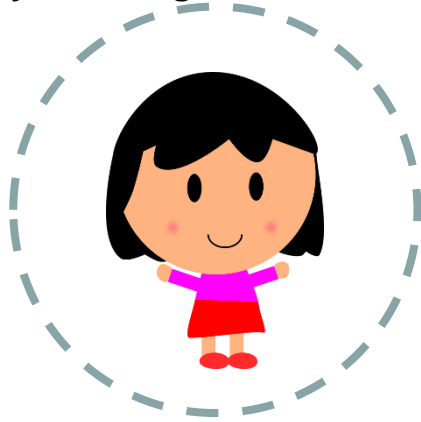
Infrastructure



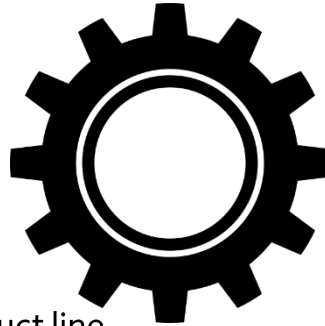
CRM







The Customer



Product line



Propensity Modeling

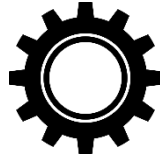
Or how to use machine learning to drive campaigns & sales!

Propensity Modeling

Data

Customer Profile
&
Interactions

Model



Modeling

Aggregated
Service Data

Propensity Modeling

Modeling

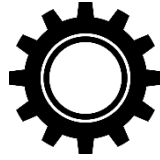
Data

Customer Profile
&
Interactions

Aggregated
Service Data

Modeling

Model



Regularized Linear Models
Random Forests
Boosted Linear Models
Boosted Tree Models
Neural Networks
...

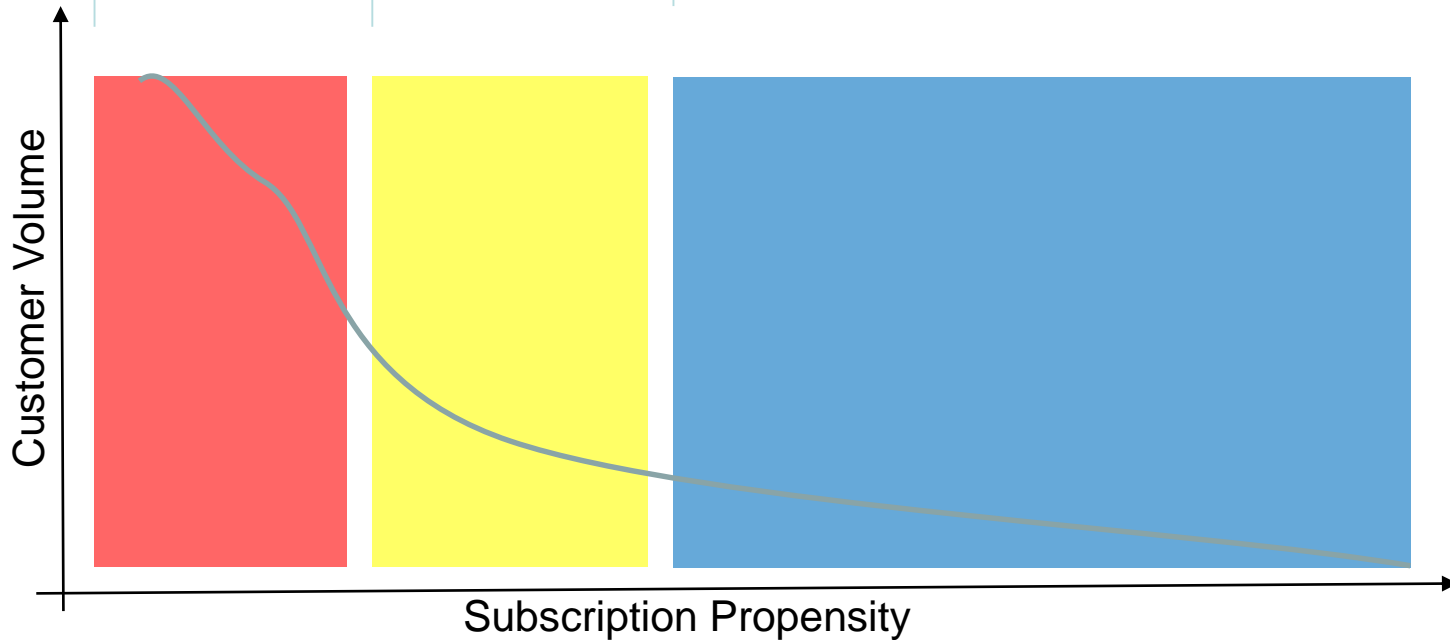
$P(x)$

Service
Subscription
Propensity
Based on
Historical Data

Try to sell something else

Maybe we should consider something else

Recommend this offer



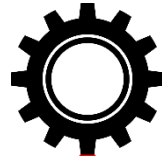
Data

Customer Profile
&
Interactions

Aggregated
Service Data

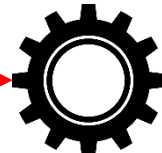
Modeling

Model



Customers with higher propensity to subscribe

Lower
propensity
to subscribe

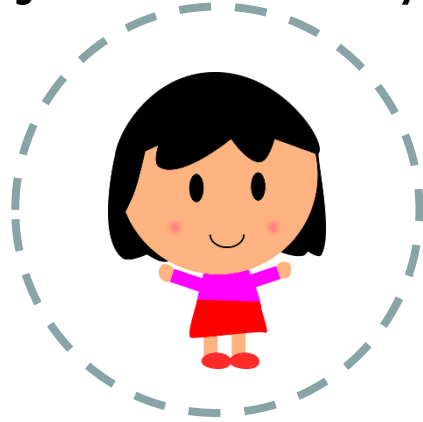


...

Campaigns & Sales

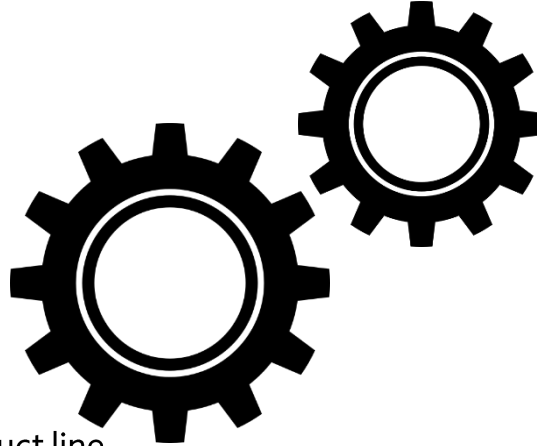


Communication
Channels



The Customer

Improving Call Center Efficiency

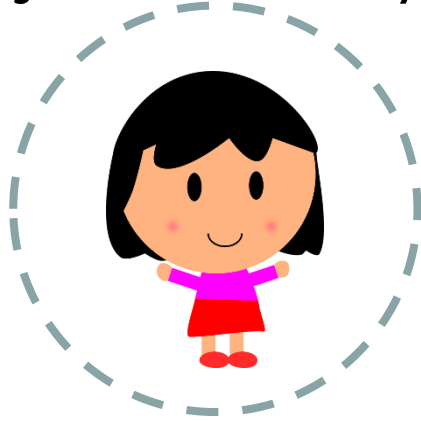


Product line



Communication Channels

Operations Research meets Machine learning



The Customer

Find the best time to call...



...but keep the operators always busy.

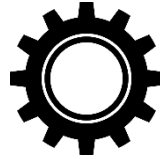
Improving Call Center Efficiency

Data

Past Attempts

Modeling

Best time to call
Model



Aggregated
Service Data

Improving Call Center Efficiency

Best time to call Model

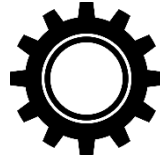
Data

Past Attempts

Aggregated
Service Data

Modeling

Best time to call
Model



Regularized Linear Models

One per each hour

$P(x)$

Hourly probability
of picking up
the phone

Improving Call Center Efficiency

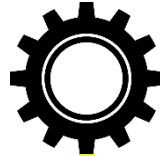
Data

Past Attempts

Aggregated
Service Data

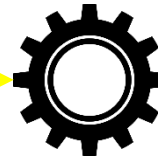
Modeling

Best time to call
Model



Hourly Probability
of Taking a call

Operation Optimization
Model



Improving Call Center Efficiency

Operation Optimization Model

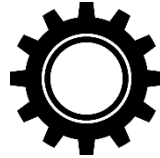
Data

Past Attempts

Aggregated
Service Data

Modeling

Operation Optimization
Model



Allocation model
Many operational restrictions
Optimizes a call pick up index

Optimal Allocation
schedule to call
the costumers

Improving Call Center Efficiency

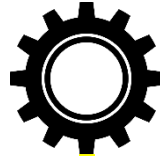
Data

Past Attempts

Aggregated
Service Data

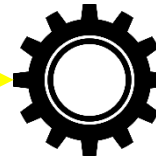
Modeling

Best time to call
Model



Hourly Probability
of Taking a call

Operation Optimization
Model

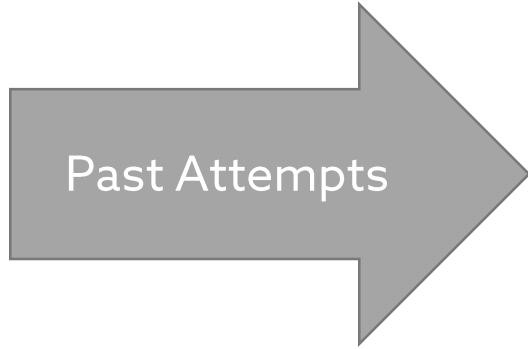


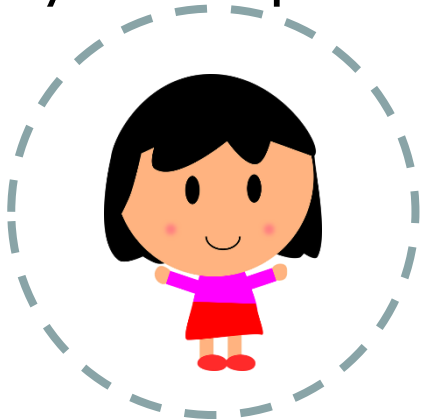
Customer Contact



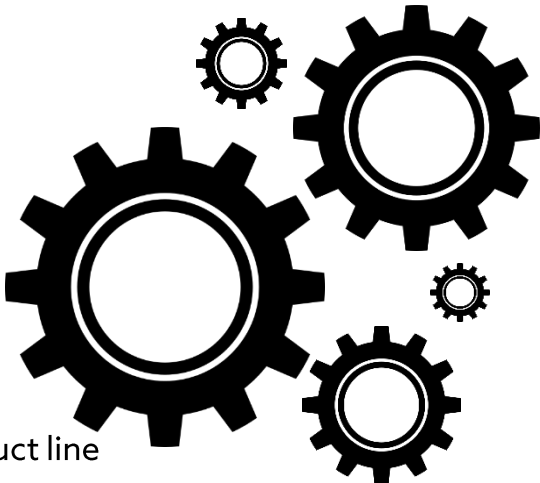
Call Centers

Optimized calling schedule





The Customer



Product line

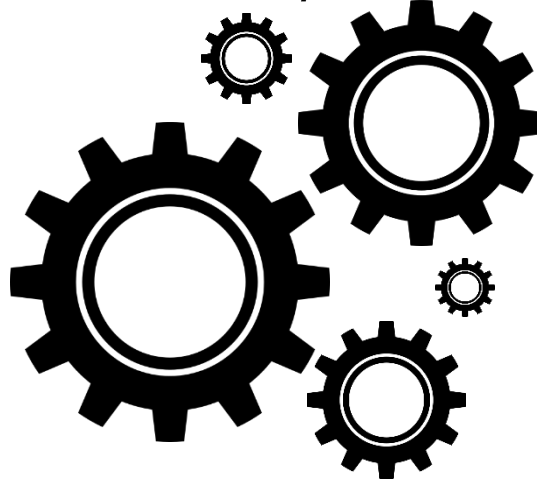


Communication Channels

Other Analytical Developments

Plenty of problems to solve!

Improving Call Center Efficiency



Propensity Modeling

Improving Service Quality

Churn Prevention

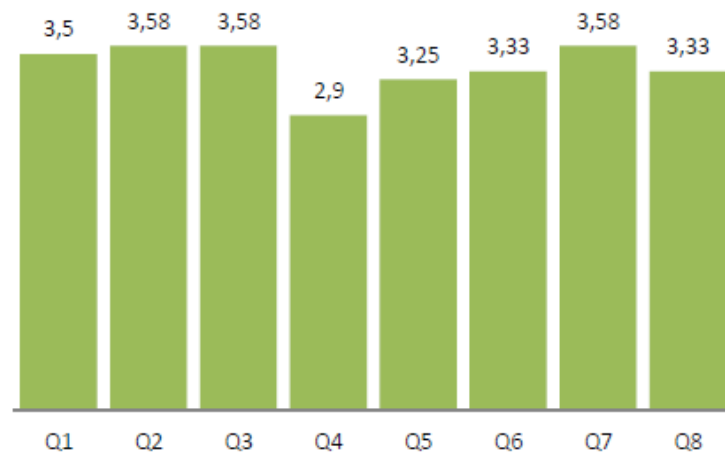
Customer Segmentation & Profiling

New Products and Bundles

Q&A

HELP US TO IMPROVE!

#Q	Questão
Q1	Em que medida considera que os conteúdos da apresentação foram adequados a cadeira de seminário?
Q2	Em que medida o desempenho do formador contribuiu para a compreensão dos conteúdos?
Q3	Em que medida a qualidade técnica do apresentador contribuiu para a formação?
Q4	Considera que esta apresentação teve impacto ao nível do seu desempenho em equipa dentro da organização onde trabalha?
Q5	Considera que esta apresentação pode ser útil na progressão da sua carreira?
Q6	Considera que esta apresentação foi útil para o seu desenvolvimento pessoal?
Q7	Recomendaria esta apresentação a outras pessoas?
Q8	De que forma contribuiu o conteúdo do documento de apresentação para a aprendizagem?



<https://www.surveymonkey.com/r/33QP6BX>

THANK YOU!