

COMPANY PROFILE

Rabiön Consultancy B.V. is an independent consultancy firm in Information and Communications Technology, based in The Netherlands. We focus at the Telecommunication industry. Our clients are Telecom Operators, Service Providers, Governments and Telecom Regulators, and Telecom solution/equipment suppliers.

The company is founded in 1999 and privately owned by Raymond Bouwman (through a holding company Rabiön B.V). Rabiön Consultancy is registered in the Netherlands Chamber of Commerce (registration number 24301595).

The main areas of expertise that we work on are:

- Mobile Communication network technology (GSM, GPRS, UMTS, HSDPA, WLAN, 4G/LTE, 5G)
- Transmission and Connectivity
- Spectrum Management, Radio Technology
- Mobile Virtual Network Operators (MVNO, MVNE) and Wholesale
- Telecom Infrastructure and services (MPLS, IP, ADSL, VoIP, DVB)
- National and International Roaming
- M2M, IoT, Data communication
- Number Portability (MNP and FNP) and Numbering Management
- Network Interconnection
- Telecom authority/regulatory work
- General Data Protection Regulation (GDPR)

The services that Rabiön Consultancy provides to its customers are:

- Consultancy
- Business and Impact Analysis, Feasibility, Benchmark Studies
- Project Management and Program Management
- Cost Modelling for Telecommunication
- Service and Infrastructure Development, Technical Design
- Auditing
- Tender/RFQ Management and contracting
- Cost Analysis and cost modelling consultancy
- Training and Workshops
- Expert Documents (Court cases expert opinions)

Some of our clients are: KPN, T-Mobile, Orange and Ziggo in the Netherlands. We have clients internationally such as VEON/Vimpelcom, BASE (Belgium), iBasis(US), Oberthur (France), Truphone, UTS (Netherlands Antilles), TNM Malawi, Setar Aruba (Mobile Operator), Vodafone Roaming Services (Luxemburg), Orange Moldova, TATA Communications Canada), Airbus (Mexico).

We have several Regulatory Authorities as clients : DTZ (Telecom regulator of Aruba), BTP (Telecom regulator of Netherlands Antilles), TRA (Telecom regulator of Bahrain), TAS Suriname, European



Commission (DG CNECT), Office of Utilities Regulation Jamaica, African Union Commission (AUC) in Addis Ababa, Conatel Telecom Regulator of Haiti, TRC in Jordan, ARCEP in Burkina Faso, the Ministry of Telecommunication in Netherlands, Channels Islands Competition and Regulatory Authorities (CICRA).

Rabión Consultancy has been working on many projects that involved business analysis and impact analysis in order to define the functional and system requirements and design specifications. Our strength in these projects is that we have in-depth knowledge and understanding of the telecommunication business as well as of the underlying technology and implementation.

Furthermore, we have wide experience in projects where technology and regulation come together. GDPR compliancy for telecom operators is one of our fields of expertise, and we also have experience in drafting Security Plans for Telecom operators.

Rabión Consultancy has international experience in many countries such as Afghanistan, Algeria, Aruba, Bahrain, Belgium, Brazil, Burkina Faso, Canada, Curacao, France, Germany, Guernsey, Haiti, Hungary, Italy, Jamaica, Jersey, Kazakhstan, Kosovo, Luxembourg, Maldives, Malawi, Mexico, Moldova, Netherlands, Pakistan, Nigeria, Saudi-Arabia, Russia, Suriname, St. Maarten, Tunisia, Turkey, United Kingdom, USA, Ukraine etc.

Rabión Consultancy is able to cope with international and cultural differences, as well as with differences between working environments. Rabión Consultants have worked on several assignments worldwide in the field of telecommunication, with network operators as well as with regulators.

We have experience with projects that were funded by international institutions, in particular with the Inter-American Development Bank for strengthening of telecommunication authorities e.g. in Jamaica and Suriname, but also with the Worldbank.

One of the key competences that Rabión Consultancy is offering to our clients training in telecommunication. We can do this in areas such as Mobile communication, International Roaming Interconnection and Peering, MVNO, and Telecom regulation.

A list of some of the relevant references of Rabión Consultancy:

Study 5G cost elements (Netherlands)

The objective of the study is to identify and analyse the cost elements that are of relevance in (passive) infrastructure, active network elements and power facilities for the rollout of mobile networks making use of fifth generation (5G) mobile communication technology. Key questions of the study were concerning the densification of antenna sites in mobile communication networks, developments in backhaul networks and edge networks, and rules and regulations applicable for the rollout of small mobile network cells. The study described the cost elements and the order of magnitude of investments required until 2025 for each of these cost elements (fibre and backhaul technology, active radio equipment, power facilities).

Seacable policy

In Aruba the number of parties that is allowed to have concessions for Submarine Fibre Cable is limited. The Government considers to allow additional parties to install and maintain Submarine



Fibre Cable Landing. For this matter a Submarine Fibre Cable policy needs to be defined in order to regulate the number of entrants and the terms and conditions for installing and maintaining Submarine Fibre Cables.

Project management Design and Implementation of central Diameter Edge Agent (DEA) platform for LTE international roaming

The project concerned the Local Agreement with suppliers (Oracle DEA solution for LTE roaming, and system integrator), Roll out of platform in two Data centre locations, Integration with Steering of Roaming and IPXs requirements, Integration with operational companies, and GDPR compliancy (as the solution is based in the EU)

Chef de Mission l'étude de MVNO en Burkina Faso, Telecom regulator ARCEP Burkina Faso

L'étude sur l'introduction de MVNO) au Burkina Faso :

- 1) L'étude de marché pour le besoin des MVNOs
- 2) Le Benchmark international
- 3) L'étude technique des MVNO pour Burkina Faso
- 4) L'étude économique des MVNOs
- 5) L'étude du cadre législatif et réglementaire des MVNOs pour Burkina Faso
- 6) Le plan d'action assorti d'un planning et de calendrier de mise en œuvre de l'introduction des MVNOs au Burkina Faso
- 7) Les recommandations.

VEON (formerly Vimpelcom) Group, Amsterdam Netherlands, July 2015 – Oktober 2016

- 1) Tender management and vendor selection for European MPLS backbone,
- 2) Tender management and vendor selection for a Central Interconnection Voice Platform
- 3) Implementation of Centralisation of International Interconnection, Vimpelcom International Services,
- 4) Project Management and Design for Network and IT, Vimpelcom International Services, Amsterdam

DTZ, Telecom Regulatory Authority of Aruba. Consultancy concerning the use of foreign IMSI/MCC codes. Consultancy for the Government of Aruba regarding Mobile Country Codes (MCC) and Mobile Network Code (MNC) and the International Mobile Subscriber Identity (IMSI) plan for Aruba, including Publications for the Kingdom of the Netherlands to the ITU-T study group SG2 regarding the interpretation of the E.212 recommendation of ITU-T, as well as support to the regulator as expert in court cases on this matter in Aruba.

TRA, Telecom Regulatory Authority of Bahrain, Kingdom of Bahrain (Middle East region), Managing the Development of Number Portability Implementation. The work consisted of Specification of MNP and FNP process, Specification of Routing and Charging, Specification of Central system, Public Consultation and Consultation Report on Specifications, Technical Specification of system, Tender on Central NP system (RFP and Response Validation), NP implementation, Chairing of Working Groups, Document Management and Project Management

MVNO Design and Implementation. Rabion Consultancy has worked on design and implementation of Service Provider (SP), enhanced Service Providers (ESP), Mobile Virtual Network Operator (MVNO) and Mobile Virtual Network Enabler (MVNE) solutions. Most of this work has been executed in the



Netherlands for the mobile networks of KPN and for T-Mobile. Some examples that we have been involved in are Tele2, Ben, Simpel, Atlantic Telecom, Hyves, Lycamobile, Scarlet Telecom, Elephant Talk, Albert Hein, Truphone etc. We also have experience in working at the retail end of the wholesale chain e.g. for Dekatel in the Netherlands.

Implementation of the Roaming Hub for Vodafone Roaming Service (VRS). Rabi3n consultants worked on the implementation of the roaming hub for Vodafone, on project management, planning management and technical product management. The Hub aims to centralize all Vodafone relations into a central solution, and work from one central organization.

Interconnection Design, Implementation and Development (KPN, T-Mobile etc.). Rabi3n Consultancy has worked on Interconnection implementation and migration (within operators, between operators, between technologies etc.) and on Interconnection management. The interconnection experience includes aspects such as numbering management and number portability, representation in interconnect committees, and contacts with ministries and regulators. Our experience includes business analysis and design of Interconnect Billing solutions, and introduction of new technological developments in interconnection business (MVNO, VoIP, WLAN, IP interconnection).

Office of Utilities Regulation (OUR), Jamaica. Automation of Numbering Administration functions Implementation. The aim of this assignment was to undertake the development and implementation of a secure computer-based solution allowing web-based transaction processing for the automation of the Numbering Administration functions, including the administration of Toll-Free Numbers, in order to establish a more solid process for numbering management for the telecommunication market of Jamaica. The work consisted of delivering a User Requirements Document, a Technical Requirements Document, and a System Design Document. Multilateral Investment Fund (MIF) operated by the Inter-American Development Bank (IDB) under the project 'ATN/MT9350-JA, Strengthening Competition in Telecommunications: support to the Office of Utilities Regulation

Mobile Number Portability, T-Mobile Netherlands. Design and Implementation projects for automation of MNP processes, T-Mobile Netherlands: Mobile Number Portability re-design and implementation improvements for the inter-operator and clearing process, Interconnect Routing and charging project based on MNP data, Mobile Number Portability and Future Activation Project, Automation of out porting process, Evaluation of the national Netherlands Study for Next Generation Networks (NGN) MNP implementation

Telecommunication Training, European Commission, DG CNECT. The assignment concerned a telecommunication training study for the European Commission: The training covers: Telecommunication Overview, Mobile technologies, Broadcast Technologies, Broadband Technologies, Satellite communication, Transport, Internet, Network Developments (NGN), Terminals, Standardization, Interconnection, Local Loop Unbundling



Study Data Roaming Services, European Commission. Study for the European Commission concerning data roaming services and the need for price regulation. The assignment concerned a study for the European Commission to define and analyze:

- the European retail and wholesale market for data roaming services
- the technology for data roaming services in mobile communication networks
- the cost perspective for data roaming services

The study served as input for the Commission in reaching a decision concerning regulation of data roaming services.

Telecom regulator Suriname (TAS), Telecommunicatie Autoriteit Suriname (TAS). Providing training to the Telecommunication Authority of Suriname concerning Numbering Management, Number Portability, Domain Naming and Addressing, providing training to the Telecommunication Authority of Suriname concerning Telecommunication technology, Study on the economic value of a broadband license in Suriname.

Mobile Network Operators (MONET). This organization in the Netherlands, amongst other things, supports the delivery of location data for mobile sites to municipalities. At a yearly basis each municipality receives a location plan that contains all planned and installed radio sites for GSM and UMTS. The system that contains the (confidential) location plan data has been specified and selected by Rabi3n Consultancy. The system generates, based on a GIS application, an overview of all mobile operators sites (combined for all network operators). The acquisition of licenses to install mobile radio sites has been strongly improved by this system. The tasks of Rabi3n Consultancy in this project were Definition and feasibility study, Requirements definition, Request for Proposal project, technical and commercial hearings with vendors, proposal validation and vendor ranking, Recommendation for solution and vendor selection, Test and en Implementation, Definition and negotiation of Service Level Agreement (SLA).

Number Portability Design and Implementation, Netherlands. Rabi3n Consultants worked on the implementation of Number Portability in Netherlands in 1997, 1998, and 1999 as Business Analyst for Number Portability functions in IT systems (including central NP system COIN). Impact analysis and Business Case developments Definition of Business, Requirements for automation of Mobile Number Portability Process, Project Management and IT implementation of Mobile Number Portability functions in IT systems, Business analysis and Financial modelling for Mobile Number Portability (MNP, Definition and advise to management on MNP solutions, Project management for MNP implementation, IT supplier management, Design and Implementation of Customer Service Process, Customer Care and Billing implementation of MNP, Representation in the National Steering committee for Number Portability in the Netherlands, Definition Study for next phase Mobile Number Portability implementation, Strategy development for implementation of Number Portability, Strategy and Definition study for the implementation of Number Portability Study of Billing Mediation Scenario's

For further information please contact us:

Rabi3n Consultancy B.V. ,

Koningsweg 1-B, 7255 KR, Hengelo (Gld), the Netherlands



rabiónconsultancy

www.rabion.com - email: office@rabion.com

tel. + 31 650287899