

cell & sat



Cellular & Satellite



Cell & Sat

➤ **Systems engineering company**

- Established in 2005
- Located in Paris, France

➤ **Mission**

- Provide expertise at the cross-road of **Cellular & Satellite**
- Focus on alleviating the digital divide in Emerging markets

➤ **Business positioning**

- Consulting activities
 - *Assignments with cellular and satellite operators, regulators*
- Technical innovations
 - *System specifications, patents, optimization software*

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Cell & Sat consultants

Didier Verhulst

France Telecom R&D
Alcatel Mobile
Skybridge, Alcatel Space

Jean-Marc Hanriot

Alcatel Mobile
Alcatel Mobile Broadcast
Alcatel-Lucent Services

Patrick Forgnone

Alcatel Mobile
Alcatel Space-Thales
Metracom

Michel Mouly

France Telecom R&D
Nortel Networks
Cell & Sys (GSM publications)

Philippe Guillier

Alcatel Mobile
Alcatel-Lucent Africa
Teacher

Jérôme Poucin

Alcatel Telspace
Rascomstar
Kacific

Luc Dartois

Alcatel Mobile
Nokia Bell Labs

Laurent Thomas

Alcatel Mobile - Nokia
Open Cells project

Basile Verhulst

Blockdynamics
Chainlabs

Vincent Roger-Machart

Setics
Albaron Digital
Cogicom

+ Partner network

- 3GPP standardization
- Market evaluations
- Software development
- System integration & validation

Some references

➤ Technology evaluations

- Comparison of satellite networking solutions
- Evaluation of fixed and mobile wireless technologies
- Design of stratospheric cellular systems



➤ Business strategy and Marketing

- Market assessment
- Definition of service/product offering
- Business planning



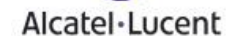
➤ Cellular & Satellite operations

- Technical audit of mobile operator
- Satellite network engineering



➤ Specifications and product developments

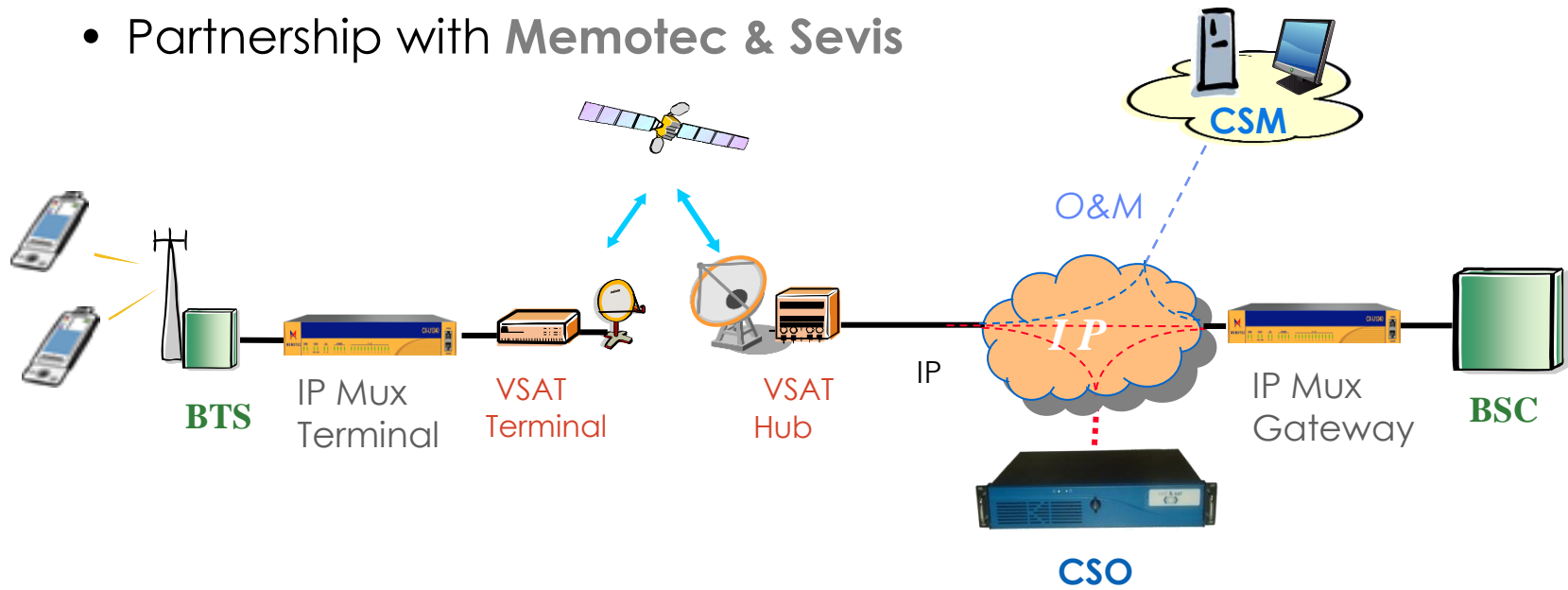
- Cellular backhaul optimisation software
- Definition and validation of cellular + satellite rural solutions



Local Switching product design

➤ Backhaul optimisation product

- New cellular backhaul architectures: IP and satellite based
- Cell & Sat Optimizer (CSO) and Manager (CSM) to optimize CAPEX and OPEX
- Patent filed: optimized routing of local calls, VSAT performance enhancement derived from GSM signaling analysis
- Partnership with **Memotec & Sevis**



Rural base station product design

➤ Terminal

- At the remote site
- Controls Energy, BTS, VSAT

➤ Gateway

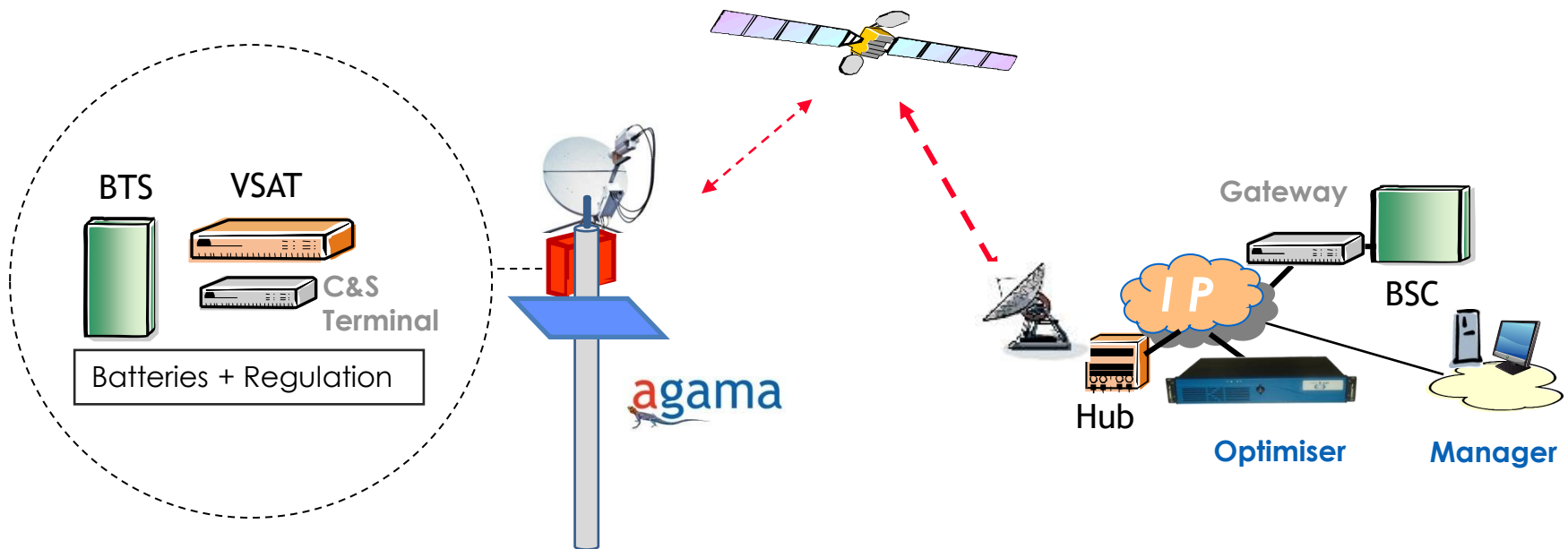
- Central, linked to BSC
- Carry signalling & control commands

➤ Optimiser

- Central server
- Energy, QoS and Space resource optimisation

➤ Manager

- Central server
- System Operation & Maintenance



Consulting: Backhaul service offering



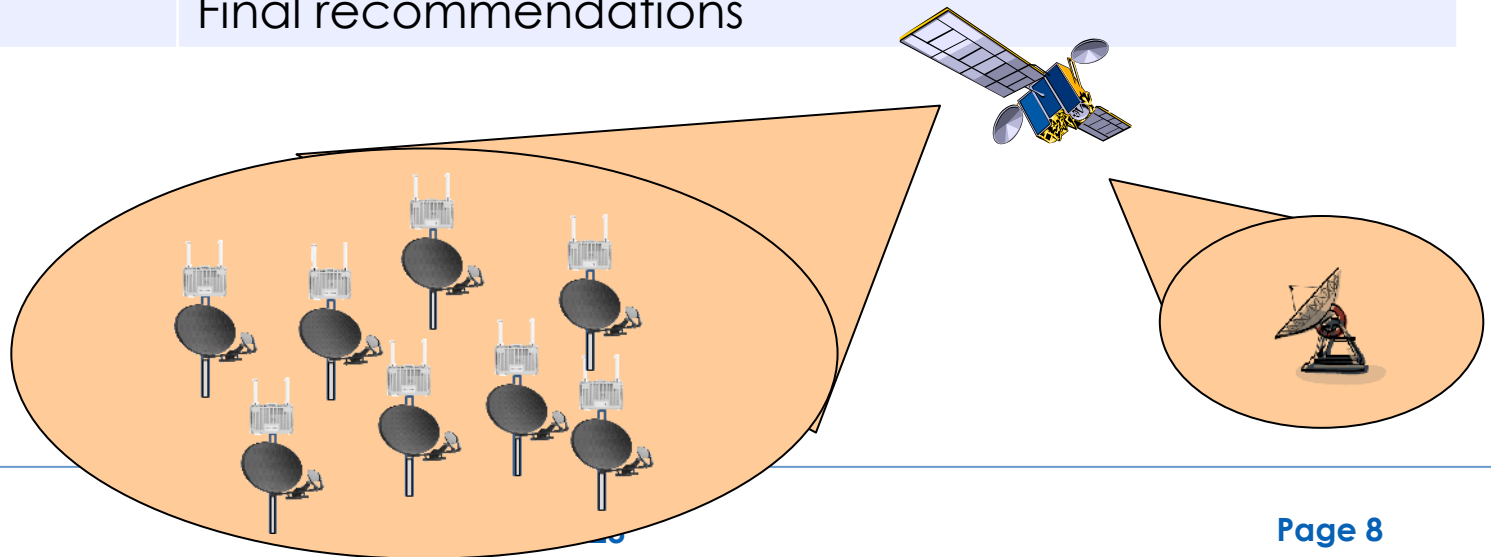
Topic	Cellular backhaul
Customer	Satellite Operator
Purpose	Build backhaul service portfolio
Inputs	Available and planned bandwidth capacity Interviews with Mobile Operators Analysis of Satellite Ground systems, Mobile radio network equipment and solar power systems
Outputs	Competitive positioning versus other global players Assessment of market size Segmentation of market Definition of an optimized technical solution Definition of a Managed Service offering Business case simulations



Consulting: VSAT & satellite selection



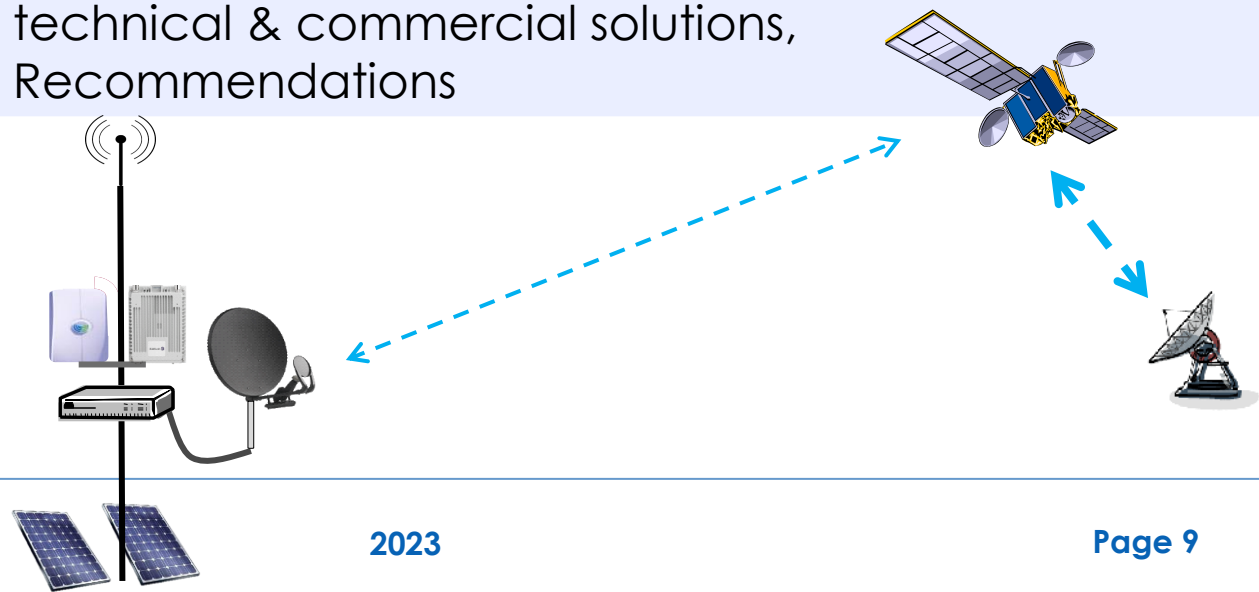
Topic	Satellite Ground System and Space segment
Customer	Mobile Operator
Purpose	Select VSAT vendor and satellite provider for a network of 500 small cells
Inputs	Business requirements from Operator (coverage, traffic and deployment planning)
Outputs	Request for Quotation to vendors Analysis of technical and commercial answers Final recommendations



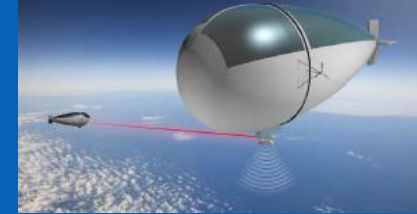
Consulting: Cellular rural coverage



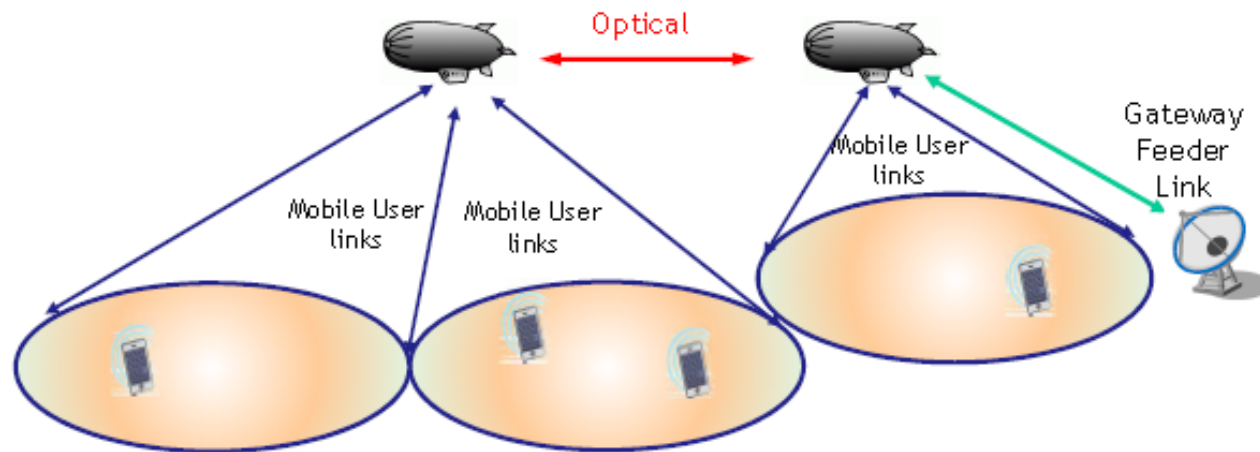
Topic	Greenfield rural site
Customer	Satellite Operator & Mobile Operators
Purpose	Select a low-cost full configuration for rural coverage including RAN, Infrastructure, Energy, VSAT
Inputs	Coverage & service requirements from Mobile Operators, Expected revenues from rural sites: speech, data
Outputs	Request for Quotation to vendors, analysis of technical & commercial solutions, Recommendations



Consulting: Technology evaluation



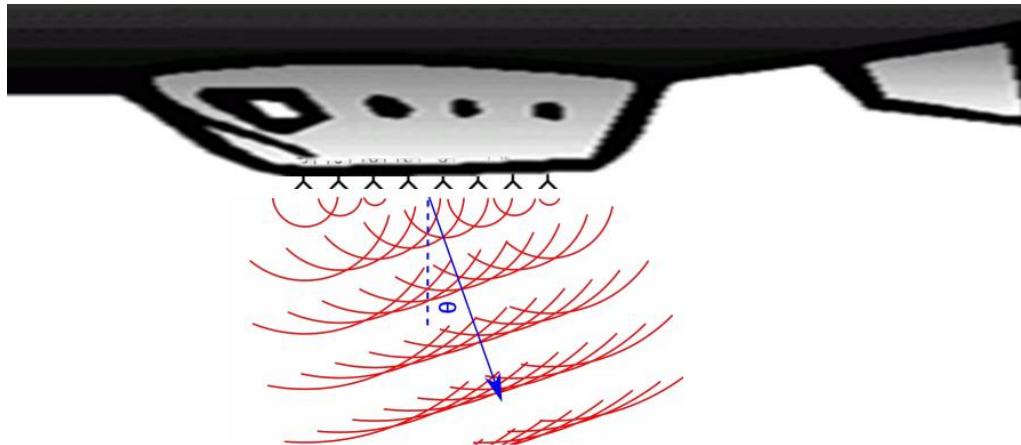
Topic	HAPS (High Altitude Platform Station)
Customer	Mobile Operator
Purpose	Assess the technical feasibility and the business case of providing 4G/5G coverage from a Stratospheric Airship



Consulting: HAPS cellular payload design



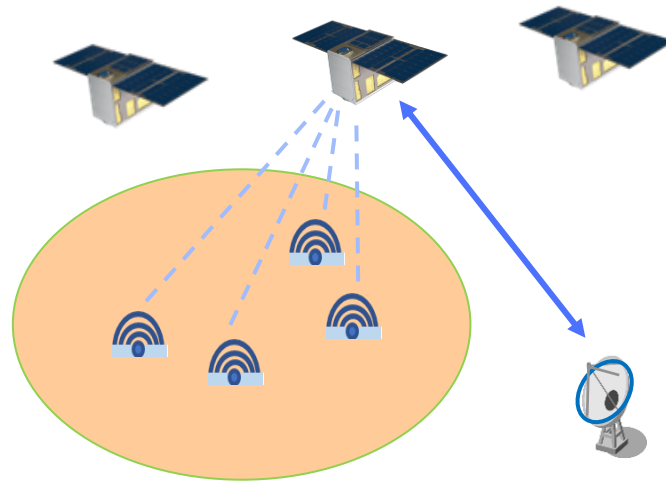
Topic	Stratospheric cellular payload
Customer	HAPS Operator
Purpose	Design, simulate & test a 4G cellular payload for a stratospheric airship



Consulting: Satellite IoT system design



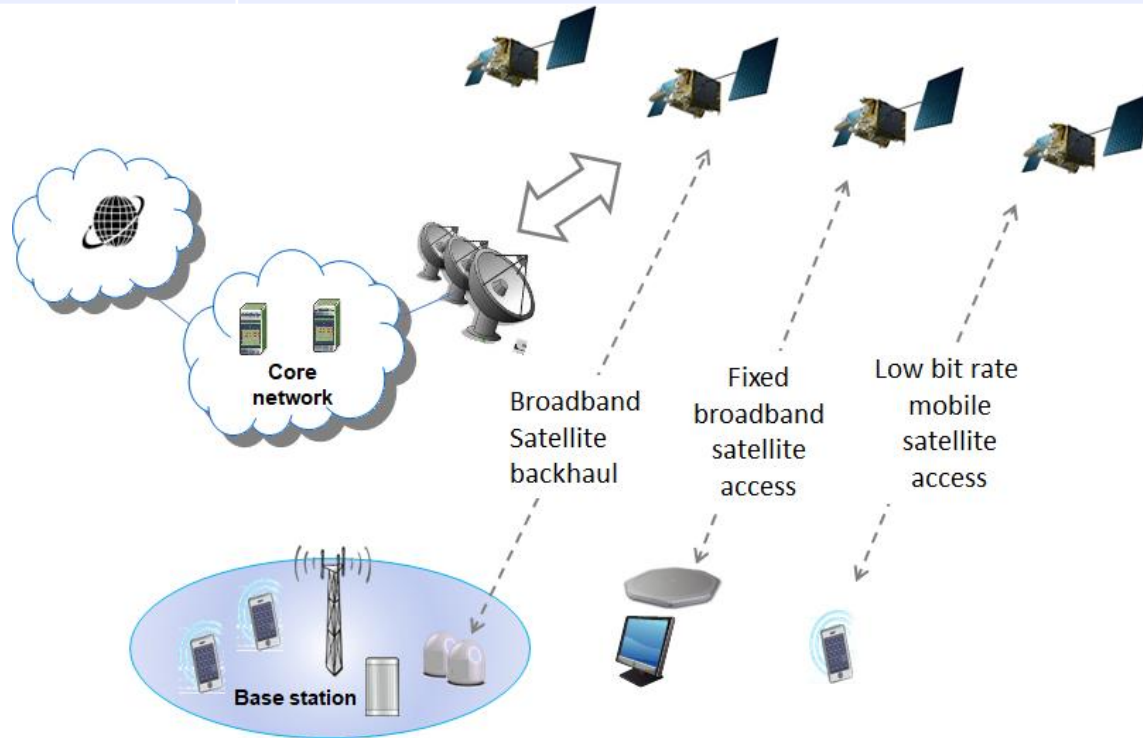
Topic	Internet of Things per satellite
Customer	Satellite Operator
Purpose	Define an “Non-Terrestrial Network” evolution of the 5G standard for satellite compatibility with cellular NB-IoT & LTE-M devices



Consulting: 3GPP NTN standard



Topic	3GPP standardisation
Customer	Satellite Operator
Purpose	Contribute to the definition of Non-Terrestrial Network (NTN) options of the 3GPP 5G standard





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