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An investment-friendly framework for spectrum awards, a case study from Austria

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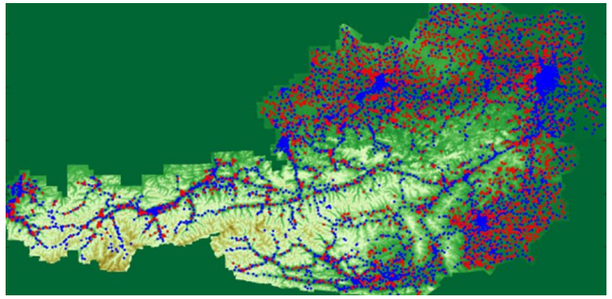

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Background

- RTR completed 700, 1500 and 2100 MHz spectrum the auction in September 2020.
- The auction ran over four stages:
  - two stages for the assignment of bandwidths (700 and 2100 MHz band followed by 1500 MHz band.
  - a sealed bid stage for the **assignment** of specific frequencies
  - a reverse auction for the discount for additional supply of underserved areas.
- 700 MHz spectrum band was linked to obligations to cover 900 out of 2100 local communities (Katastralgemeinden or uKGs)
- In addition, **bidders could commit to cover further communities in exchange for a discount** on their spectrum fees in the fourth stage of the auction process.

Objective of the regulator

- Improvements of mobile coverage to areas likely to secure the **greatest incremental economic gain** for the society/population.
- Determine the **investment costs** for MNOs to **meet the coverage objectives**
- Increasing the data rate & improving the coverage to:
  - **indoor** residential population and commercial units
  - **on roads** both outdoor and in-car to support
  - **outdoor** widespread areas
    - less frequently visited by people (geographic coverage) to support **at least voice** calls and low data rate technologies such as MTC in support for IoT.

List of underserved areas (prioritised and Identified

KG-NR	Katastralgemeinde	Priorität "P"	Priorität "I"
04007	Glashütten	P	I
04012	Heiligenkreuz		
04013	Äußerer Kaltenbergerforst	P	I
04014	Innerer Kaltenbergerforst	P	I
04026	Raisenmarkt		I
04027	Rohrbach	P	I
04029	Schwechatbach	P	I
04039	Windhaag	P	I
04041	Kleinmariazellerforst		I
04108	Schranawand		
04301	Altenmarkt		
04304	Berndorf III	P	
04306	St. Corona		
04308	Fahrafeld		
04309	Furth	P	I
04310	Gadenweith	P	
04314	Kleinfeld	P	I
04316	Kleinmariazell	P	I
04318	Neuhaus	P	I
04319	Neusiedl bei Grillenberg	P	
04320	Nöstach	P	I
04322	Pöllau	P	
04325	Thenneberg		
04327	Weißenbach an der Triesting		
09002	Aschendorf	P	
09004	Bergau		I
09019	Obergrabern		I
09021	Obergrub	P	I
09022	Untergrub	P	I
09025	Hart	P	
09026	Haslach	P	I
09036	Mariathal		
09037	Nappersdorf		
09040	Porrau	P	I
09042	Puch		
09045	Roggendorf	P	
09061	Suttenbrunn		
09066	Weyerburg		
09069	Windpassing		

Selected railway lines

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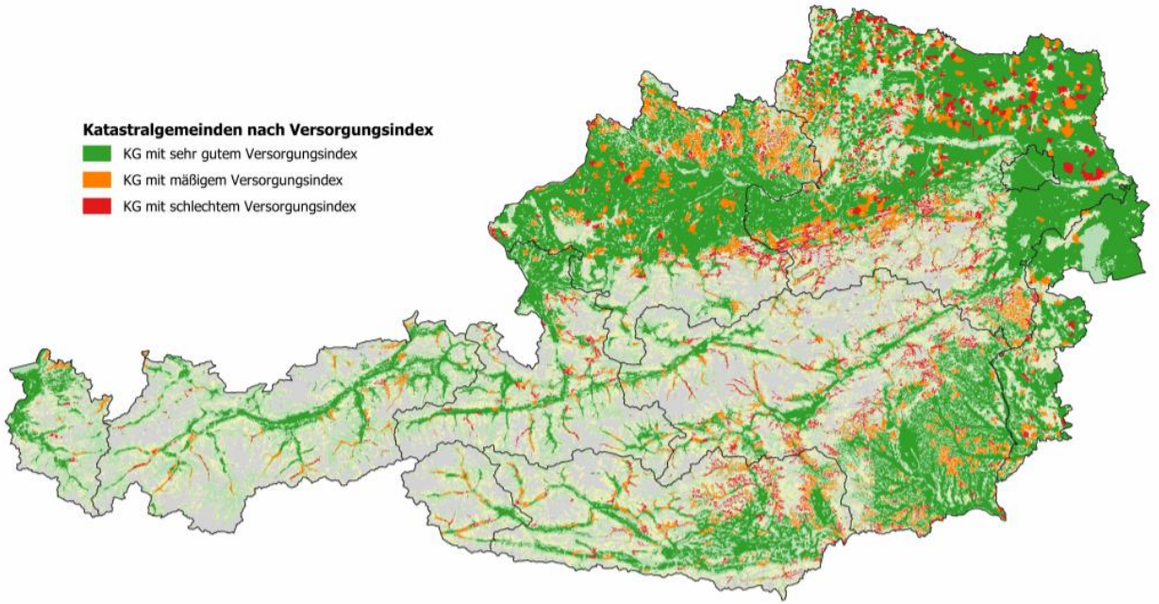
Coverage conditions

- Different levels of coverage and service availability:

Category	Coverage	Data Rate (DL/UL)
Population (Pop-Target 1)	95%	30 / 3 Mbps
Population (Pop-Target 2) by 2025	98%	10 / 1 Mbps
Regional & federal highways and selected railway lines	98% of the total lengths	10 / 1 Mbps
Coverage for **underserved rural municipalities** by 2027	**at least 900 out of 2,100**	30 / 3 Mbps



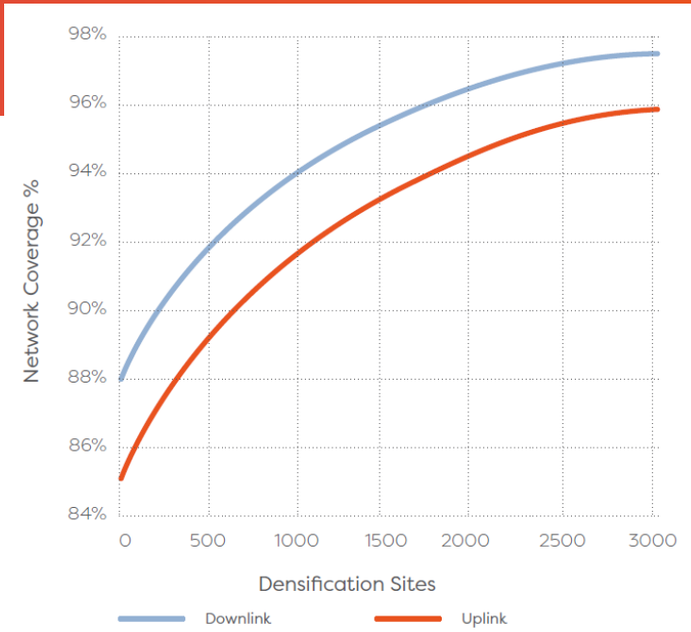
- If the operators commit to cover more underserved municipalities – above their 700 MHz coverage obligation – they would receive a rebate on their spectrum bids.

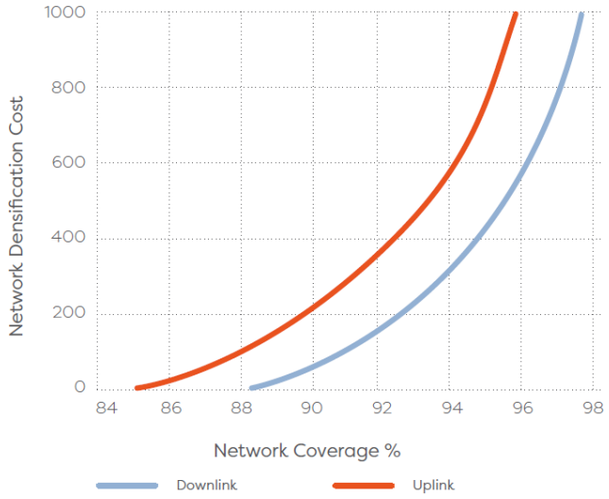
The auction process was firmly focused on the economic and social benefits of 5G

- RTR decided to establish an **investment-friendly framework for its 5G spectrum auctions**.

- RTR achieved its aim of offering a pricing model that attracted investment and a high level of increased coverage commitment from the MNOs – especially **to underserved areas**.

- This is **firmly focused on the economic and social benefits of 5G** – use the spectrum to improve connectivity for all people and spur innovation.





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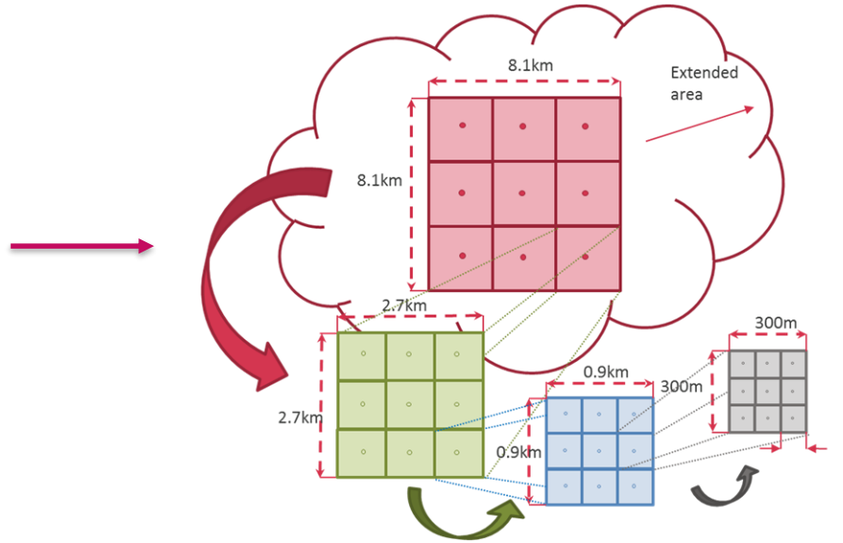
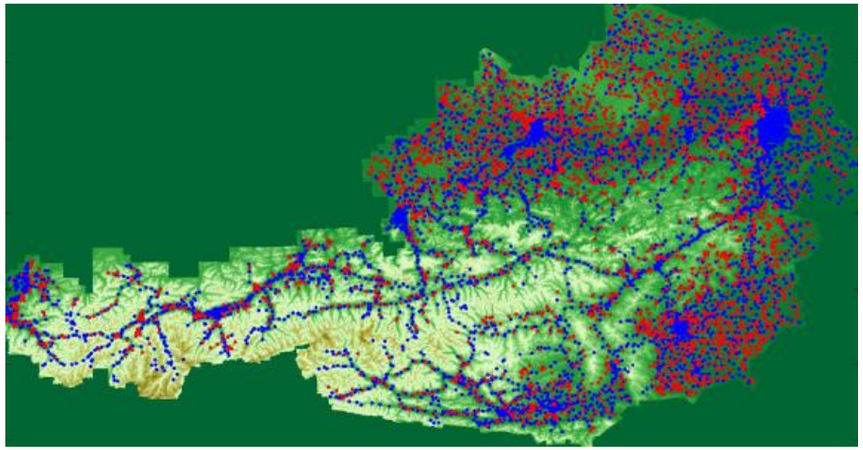
The process and the Challenges faced

- **1st Phase:** Identification of underserved municipalities by predicting the coverage based on the current infrastructure and spectrum.
- **2nd phase:** optimised site locations for MNOs' to meet the different coverage obligations and cost estimation to set meaningful rebates. i.e.
  - Easiest and quickest to cover areas.
  - Optimum site locations to cover multiple uKGs at the same time, thus saving money by meeting multiple coverage obligations.
- Outcome: coverage up to about 1,700 uKGs – almost **double the minimum requirement** and **about 81 % of all the underserved municipalities** and transport routes (road, rail) in Austria.





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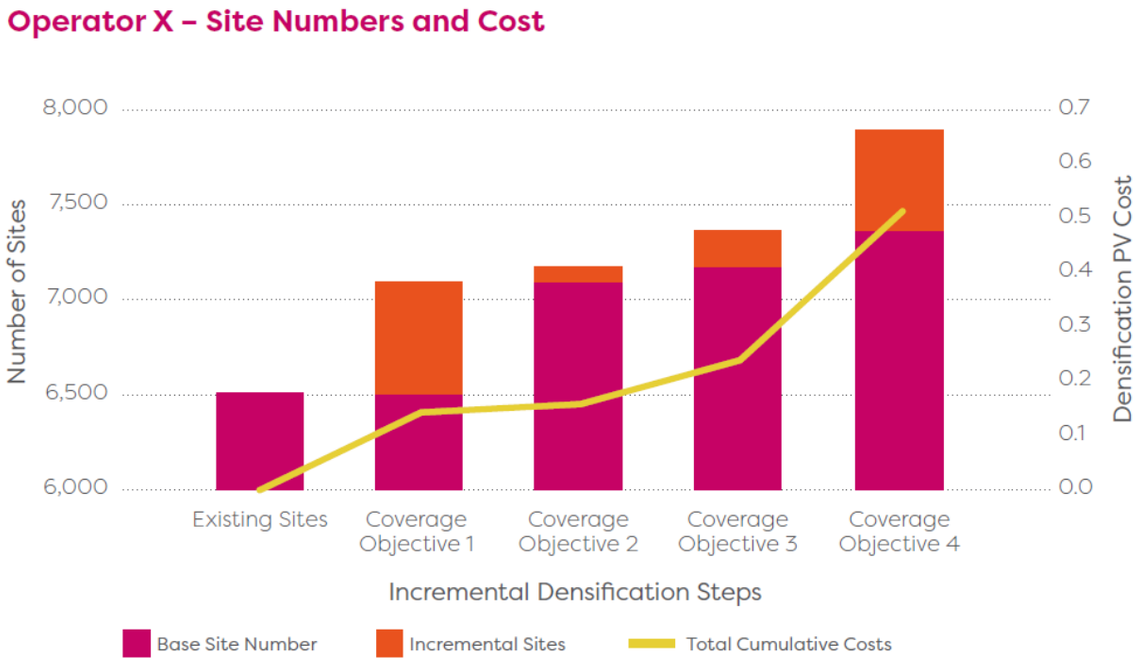
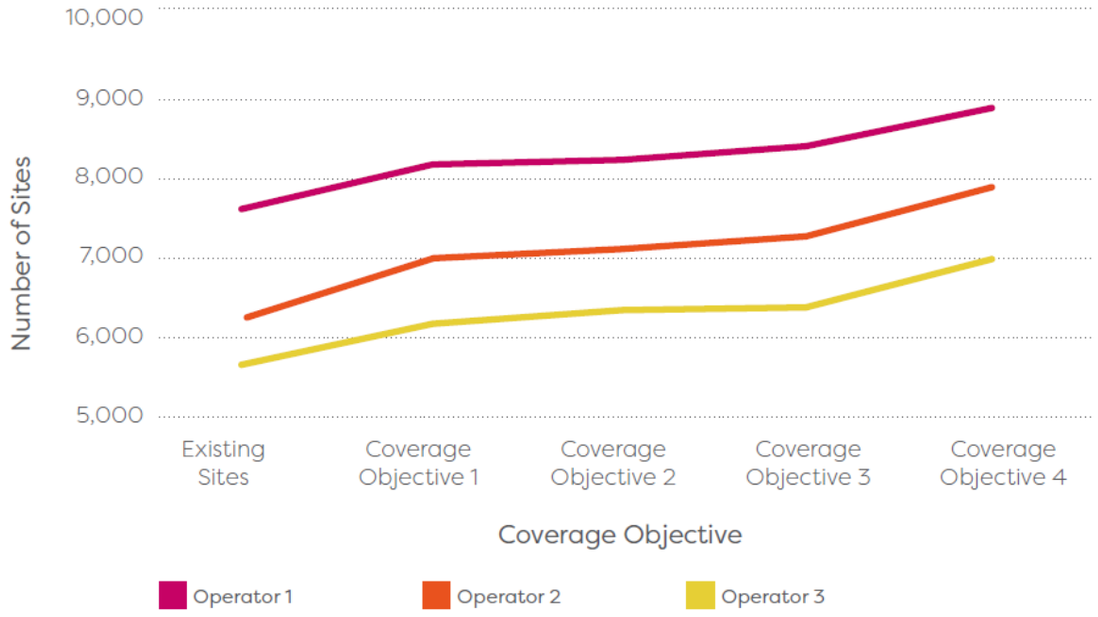
Obligation-driven site number and cost increase for a single operator

- **The most challenging part:** what it would take for MNOs to cover additional municipalities.

Obligation-driven site number & cost increase



Network sites increase per MNO and obligation



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Summary

- This novel approach, co-created between RTR and Real Wireless, sets a good example of an investment-friendly framework for spectrum awards to increase the *social and economic value*.
- The 5G auction attracted bids that, took the 700 MHz coverage number for uKGs up to about 1,700 – almost **double the minimum requirement** and **about 81 % of all the underserved municipalities** in Austria.
- This model successfully balances auction value with maximum achievable coverage and **social and economic** benefit.
- Given that most governments are keen to ensure achieving wider coverage, this is an approach that other countries could follow to secure **universal mobile coverage**.
- It isn't simple – but highly beneficial if you get it right.
- More information: https://www.real-wireless.com/government-regulators/

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