

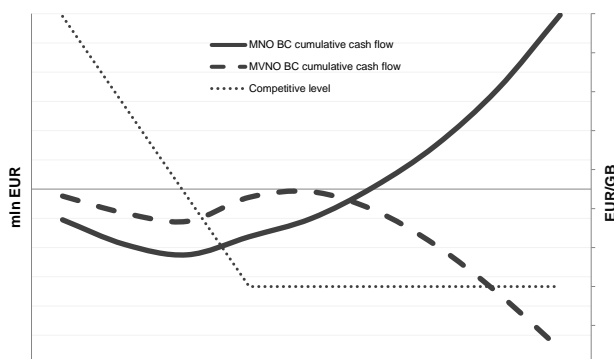
## 1&1 Drillisch's 4<sup>th</sup> MNO entry in Germany – Will it work?

1&1 Drillisch's MVNO business in Germany would become unprofitable when 5G goes mainstream, so investing in spectrum was 1&1 Drillisch's only choice to keep its business afloat. 1&1 Drillisch's 4<sup>th</sup> MNO business case will be positive if BNetzA intervenes and mandates competitive national data roaming rates.

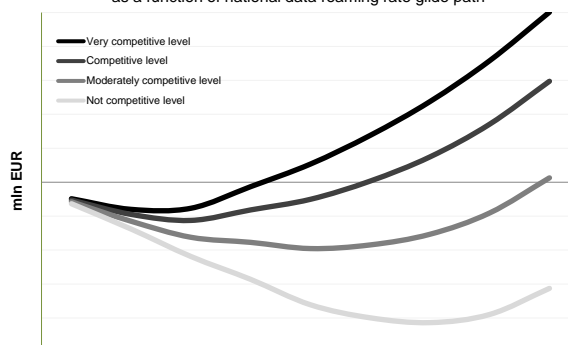
Rewheel research PRO study, February 2021

### Highlights

**1&1 Drillisch Germany MNO vs. MVNO cumulative cash flow**  
as a function of wholesale access data rate glide path

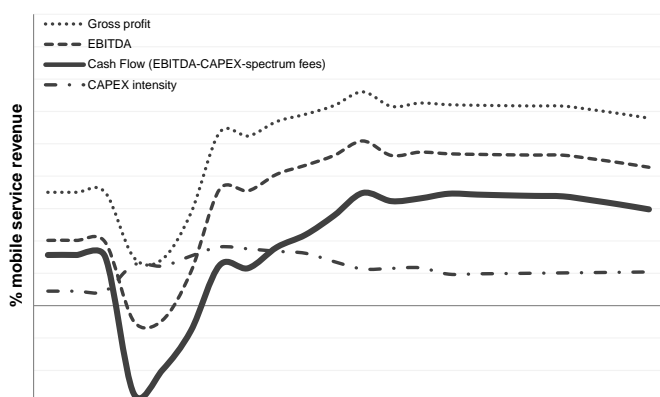


**1&1 Drillisch Germany cumulative cash flow**  
EBITDA minus CAPEX minus spectrum fees  
as a function of national data roaming rate glide path

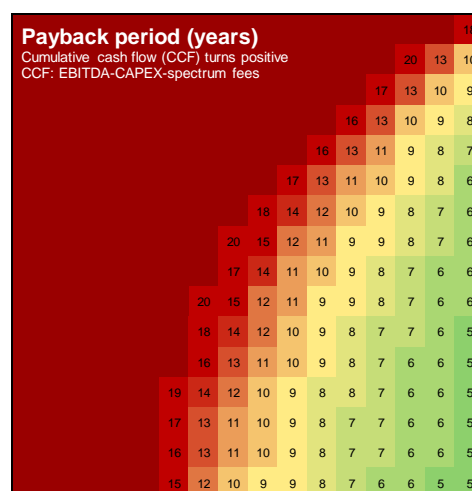


- Why 1&1 Drillisch decided to invest in spectrum?
- What was wrong with 1&1 Drillisch's MVNO business model?
- How much will 1&1 Drillisch need to invest to build a mobile network that will put it on similar footing with the other 3 MNOs?
- How much more and what type of spectrum will 1&1 Drillisch need to acquire and by when?
- When will 1&1 Drillisch's 4<sup>th</sup> MNO operation in Germany turn cash flow positive?
- How long will 1&1 Drillisch's MNO business case payback period be?
- Can 1&1 Drillisch run a profitable 4<sup>th</sup> MNO business case without securing competitive national data roaming rates?
- What is the minimum subscriber share and ARPS level required to break even in a reasonable period?
- Can 1&1 Drillisch break even with smartphone subscribers only?
- Should 1&1 Drillisch pursue fixed-to-mobile broadband substitution?
- How many 4G/5G wireless broadband subscribers can 1&1 Drillisch acquire and how much more spectrum will it need?
- Is 1&1 Drillisch's incremental 4<sup>th</sup> MNO business case positive?
- Should Bundesnetzagentur intervene and mandate competitive national data roaming rates?
- How low should a competitive national data roaming rate be when first introduced and how fast should the rate decline?

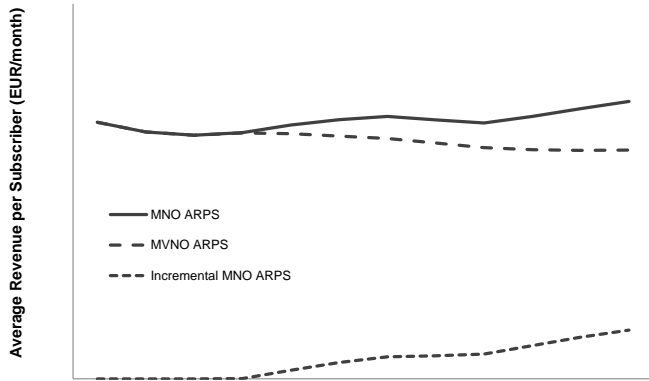
**1&1 Drillisch Germany profitability margins**  
Gross profit, EBITDA and cash flow margins & CAPEX intensity



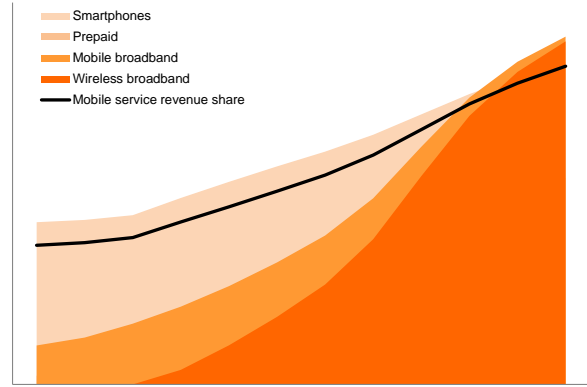
ARPS (EUR)



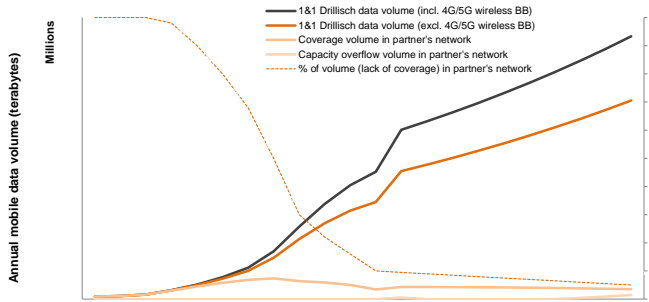
**1&1 Drillisch mobile ARPS - MNO vs. MVNO**



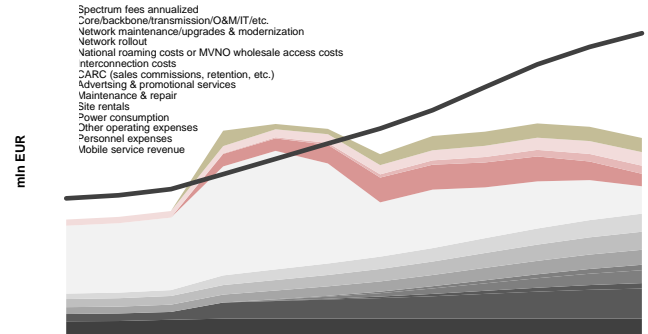
**1&1 Drillisch mobile service revenue share**



**1&1 Drillisch mobile data volume carried by own vs. partner's network**

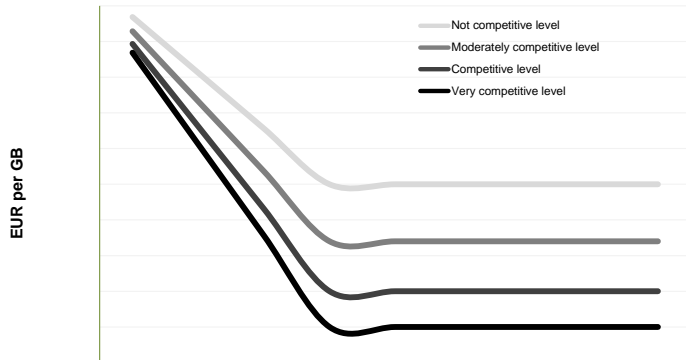


**1&1 Drillisch Germany revenue, OPEX, CAPEX and spectrum fees**



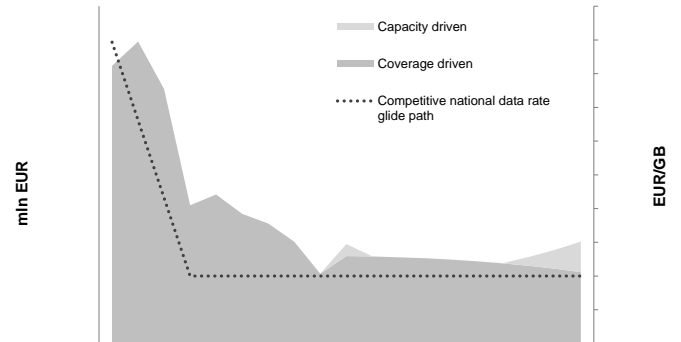
**National data roaming rate glide paths**

2022 to 2025 transition period where rates fall from the much higher current MVNO wholesale level to the targeted national roaming level



**1&1 Drillisch national data roaming cost**

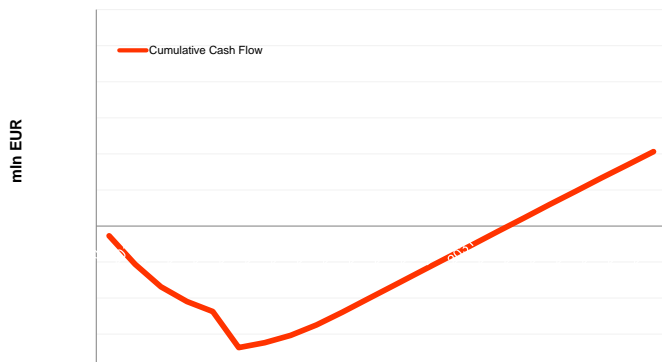
Competitive national data roaming rate glide path



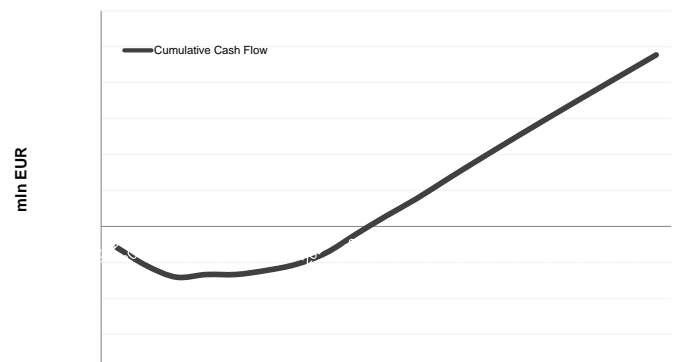
Competitive national data roaming rate X EUR/GB

Competitive national data rate glide path to X EUR/GB

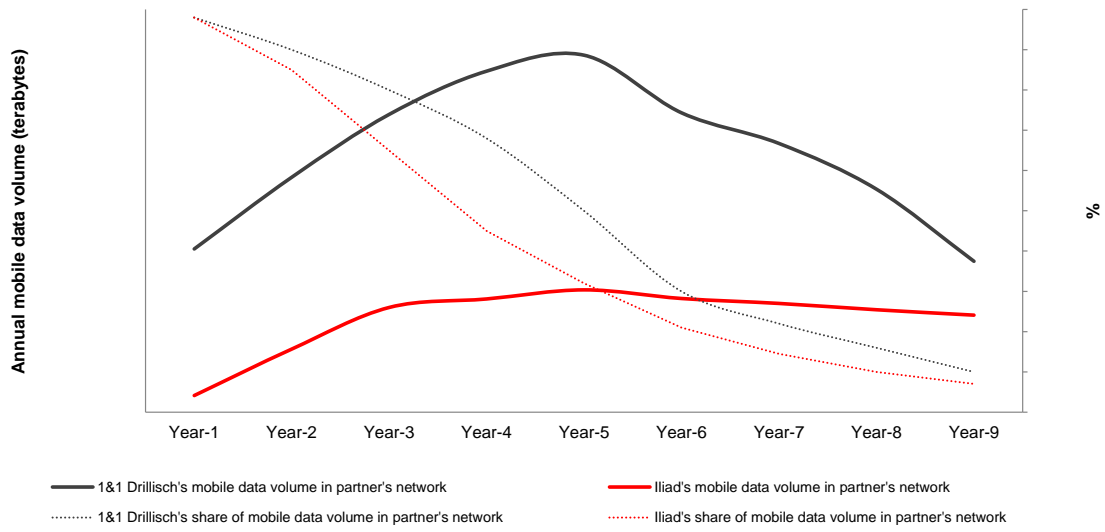
**Iliad Italy cumulative cash flow**  
EBITDA minus CAPEX minus spectrum fees



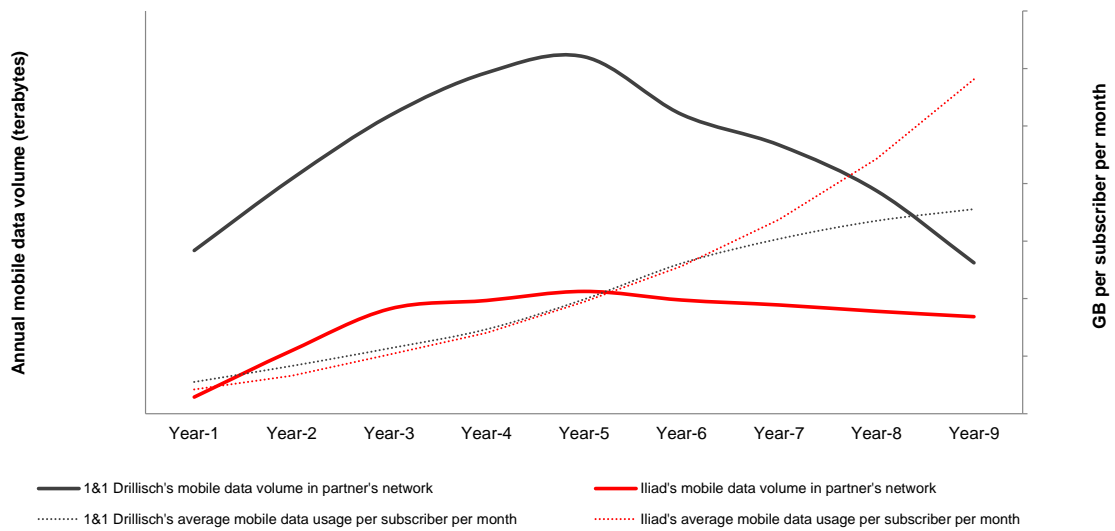
**1&1 Drillisch Germany cumulative cash flow**  
EBITDA minus CAPEX minus spectrum fees



**1&1 Drillisch's Germany and Iliad's Italy mobile data volume carried by national roaming partner's network and share of mobile data volume on partner's network**

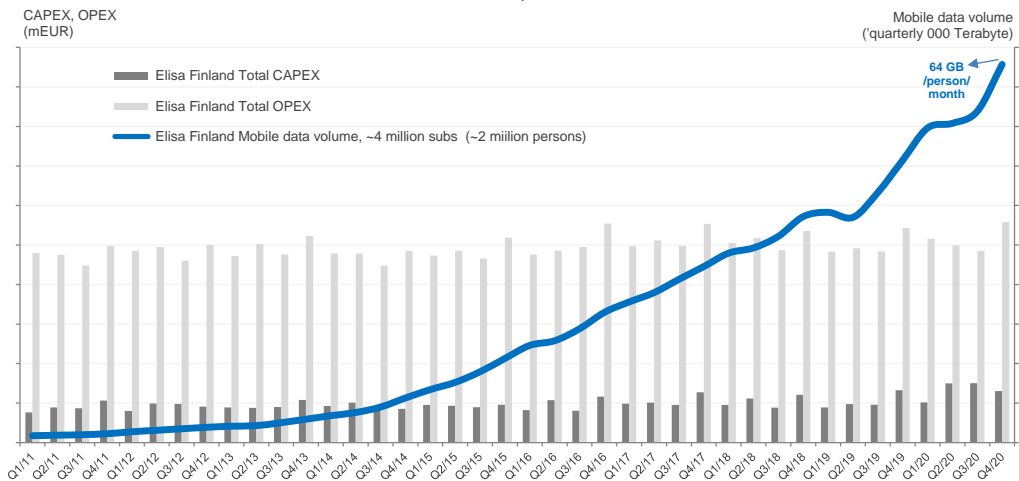


**1&1 Drillisch's Germany and Iliad's Italy mobile data volume carried by national roaming partner's network and average mobile data usage per subscriber**



**4G/5G network economics – near zero marginal mobile data cost**

The data traffic in Elisa's Finland mobile network has grown by 50x the last ten years but CAPEX & OPEX spent has remained flat



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Founded in 2009 and incorporated in Finland, Rewheel is a privately owned independent telecom research firm and boutique management consultancy. Our clients are mobile network operators, telco groups, MVNO groups, competition authorities, telecom sector regulators, governments, global internet firms, mobile data-centric start-ups, PE and VC investors.

Rewheel has delivered management consultancy work for clients in the United Kingdom, United States, Ireland, Switzerland, Finland, Sweden, Belgium, Greece, Poland, Slovenia, Hungary, Russia, Romania.

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**Telenor Denmark – Turnaround strategy**

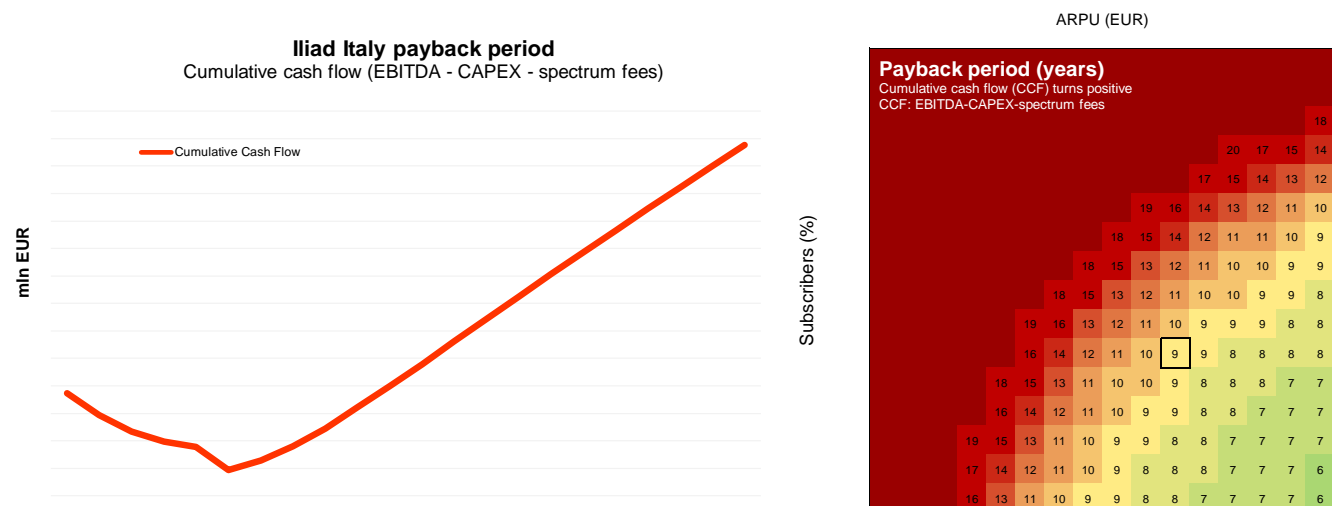
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# 1 Study context and methodology

## 1.1 Context

In January 2019 we published a study<sup>1</sup> titled “Iliad’s 4<sup>th</sup> MNO venture into Italy – Will it pay off?” that examined Iliad’s 4<sup>th</sup> MNO business case in Italy. Therein, after analysing a handful of make-or-break business case factors such as subscriber share, subscriber mix, ARPU, national data roaming cost, mobile network rollout, capacity, network load and future spectrum acquisitions we concluded that if Iliad continue to charge less than 10 EUR per month in retail, its Italian cash flow will not turn positive for years to come and its payback period will be very long.



Having acquired<sup>2</sup> a package of divested spectrum and radio network sites (the remedy package<sup>3</sup>) from Hutchison and Wind in 2016, ahead of the conditional approval<sup>4</sup> of the 4 to 3 mobile merger in Italy by the European Commission, Iliad launched<sup>5</sup> commercial service as the new 4<sup>th</sup> MNO in Italy in 2018.

By the 3<sup>rd</sup> quarter of 2020, Iliad had acquired<sup>6</sup> 6.68 million mobile subscribers in Italy (8.8% share) and was in course to rollout 5,000 mobile network sites by the end of 2020. Iliad’s guidance of building 10,000 to 12,000 mobile network sites by 2024, achieving EBITDA break even with a market share of less than 10% and generating 1.5 billion in revenues in Italy in the long term are in line with Rewheel’s business case projections.

Our analysis of capacity utilization and 5G capacity potential of mobile operator existing macro cell site grids has shown<sup>7</sup> that new 4<sup>th</sup> mobile network operator entrants or challenger mobile network operators that secure sizable holdings in the 3400 – 3800 MHz bands and some spectrum in the low- or mid- frequency bands could become formidable competitors in mobile and as well challenge the dominance of fixed-line incumbents and cable operators in home broadband with 5G wireless broadband offerings.

Following Iliad’s 4<sup>th</sup> MNO entry in France, Masmovil’s acquisition of the 4<sup>th</sup> MNO in Spain and Iliad’s 4<sup>th</sup> MNO entry in Italy the German 4 to 3 consolidated mobile market is next in line to face the prospect of disruption by a 4<sup>th</sup> MNO entry.

<sup>1</sup>[http://research.rewheel.fi/downloads/Iliad\\_4th\\_MNO\\_venture\\_into\\_Italy\\_PUBLIC.pdf](http://research.rewheel.fi/downloads/Iliad_4th_MNO_venture_into_Italy_PUBLIC.pdf)

<sup>2</sup>[http://www.iliad.fr/presse/2016/CP\\_050716\\_Eng\\_.pdf](http://www.iliad.fr/presse/2016/CP_050716_Eng_.pdf)

<sup>3</sup>[http://ec.europa.eu/competition/mergers/cases/decisions/m7758\\_2937\\_3.pdf](http://ec.europa.eu/competition/mergers/cases/decisions/m7758_2937_3.pdf)

<sup>4</sup>[https://ec.europa.eu/commission/presscorner/detail/en/IP\\_16\\_2932](https://ec.europa.eu/commission/presscorner/detail/en/IP_16_2932)

<sup>5</sup>[https://www.iliad.fr/presse/2018/CP\\_290518\\_Eng.pdf](https://www.iliad.fr/presse/2018/CP_290518_Eng.pdf)

<sup>6</sup>[https://www.iliad.fr/amf/2020/Slideshow\\_171120\\_Q3revenues.pdf](https://www.iliad.fr/amf/2020/Slideshow_171120_Q3revenues.pdf)

<sup>7</sup>[http://research.rewheel.fi/downloads/2018\\_capacity\\_utilization\\_potential\\_macro\\_site\\_grids\\_PUBLIC.pdf](http://research.rewheel.fi/downloads/2018_capacity_utilization_potential_macro_site_grids_PUBLIC.pdf)

<sup>8</sup>[http://research.rewheel.fi/downloads/Capacity\\_utilization\\_fixed\\_mobile\\_broadband\\_substitution\\_potential\\_2017\\_PUBLIC.pdf](http://research.rewheel.fi/downloads/Capacity_utilization_fixed_mobile_broadband_substitution_potential_2017_PUBLIC.pdf)

In 2018, Bundeskartellamt, the national competition authority, and many politicians from the governing coalition publicly urged<sup>9</sup> the sector regulator Bundesnetzagentur (BNetzA) to facilitate the entry of a 4<sup>th</sup> mobile network operator in the 2019 planned 2.1 GHz and 3.6 GHz spectrum auction by mandating favourable conditions such as a 5G national roaming obligation.

In June 2019, 1&1 Drillisch, a company that was formed by the merger<sup>10</sup> of 1&1 owned by United-Internet with Drillisch the 4 to 3 merger mandated<sup>11</sup> MVNO in Telefonica's network, became the 4<sup>th</sup> licensed mobile network operator in Germany by acquiring<sup>12</sup>, in the German 5G auction, 2x10 MHz in the 2.1 GHz band and 50 MHz of TDD spectrum in the 3.6 GHz band for a total of ~1.1 billion EUR.

Right after that 1&1 Drillisch presented<sup>13</sup> to investors the rationale and roadmap on becoming Germany's 4<sup>th</sup> mobile network operator. 1&1 Drillisch explained that by becoming a mobile network operator it will achieve independence from wholesale access and no longer rely on its competitors' networks. Hence it will substitute the (high<sup>14</sup>) variable wholesale access data cost with fixed-cost which will allow better fixed cost leveraging and drive higher profit margins.

At the time 1&1 Drillisch was expecting to launch a commercial 5G service during 2021 and in accordance with the coverage obligations to deploy at least 1,000 5G base stations by 2022, reach 25% household coverage by 2025 and 50% household coverage by 2030.

In December 2019 1&1 Drillisch further announced<sup>15</sup> that it reached an agreement to lease 2x10 MHz in the 2.6 GHz band from Telefonica to build its own 5G network. The agreement is based on a commitment made by Telefónica as part of the EU antitrust approval<sup>16</sup> of the merger with E-Plus back in 2014.

However, on the 16<sup>th</sup> of June 2020, Ralph Dommermuth the CEO of 1&1 Drillisch during the 2<sup>nd</sup> cellular summit in Berlin, expressed his frustration concerning the lack of progress in the ongoing national roaming negotiations with the three existing operators. Mr. Dommermuth stated<sup>17</sup> that *"What 1&1 Drillisch lacks is an agreement on national roaming with the existing mobile operators. Negotiations have been going on here for a year, so far without any result...we have now called the Federal Network Agency to get us going. Ultimately, this is an investment of 10 billion euros."*

On the 8<sup>th</sup> of December 2020, Markus Haas, the CEO of Telefonica O2 in Germany, when asked in a Die Welt interview<sup>18</sup> *"Why is there still no national roaming agreement with 1&1 Drillisch?"* stated *"The discussion about national roaming is too one-sided for me. But we are ready to come to an agreement and have made a very attractive offer. The best that 1&1 has ever received. However, we cannot give the access for free either."* When Mr. Haas was subsequently asked *"That sounds like an end to the negotiations. Do you expect the Federal Network Agency to be called on as an arbitrator?"* he responded *"We are convinced that our offer will withstand all official reviews. We moved to the limit of pain. Further negotiations are therefore unnecessary."*

So, 1&1 Drillisch 4<sup>th</sup> MNO entry in Germany appears to hang in the balance.

Will BNetzA intervene? Will it mandate a competitive national data roaming rate to enable the 4<sup>th</sup> MNO business case in Germany? And most importantly, how low should a competitive national data roaming rate be when first introduced and how fast should the rate decline?

<sup>9</sup>[https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2018/24\\_08\\_2018\\_Stellungnahme\\_BNetzA.html;jsessionid=17EA036EA6407AEE3AB3C9524798D9CE.2\\_cid378?nn=3599398](https://www.bundeskartellamt.de/SharedDocs/Meldung/EN/Pressemitteilungen/2018/24_08_2018_Stellungnahme_BNetzA.html;jsessionid=17EA036EA6407AEE3AB3C9524798D9CE.2_cid378?nn=3599398)

<sup>10</sup><https://www.united-internet.de/en/newsroom/press-releases/press-releases-detail/news/united-internet-and-drillisch-create-a-strong-fourth-player-in-the-german-telecommunications-market.html>

<sup>11</sup>[https://ec.europa.eu/commission/presscorner/detail/en/IP\\_14\\_771](https://ec.europa.eu/commission/presscorner/detail/en/IP_14_771)

<sup>12</sup>[https://www.bundesnetzagentur.de/SharedDocs/Pressemitteilungen/EN/2019/20190612\\_spectrumauctionends.html](https://www.bundesnetzagentur.de/SharedDocs/Pressemitteilungen/EN/2019/20190612_spectrumauctionends.html)

<sup>13</sup>[https://imagepool.1und1-drillisch.de/v2/download/presentationen/2019-06-27-5G\\_Rationale-eng.pdf](https://imagepool.1und1-drillisch.de/v2/download/presentationen/2019-06-27-5G_Rationale-eng.pdf)

<sup>14</sup>[https://imagepool.1und1-drillisch.de/v2/download/berichte/1und1\\_Drillisch\\_AG-Q3\\_2019\\_ENG.pdf](https://imagepool.1und1-drillisch.de/v2/download/berichte/1und1_Drillisch_AG-Q3_2019_ENG.pdf)

<sup>15</sup><https://www.1und1-drillisch.de/press/read/1332>

<sup>16</sup>[https://ec.europa.eu/competition/mergers/cases/decisions/m7018\\_6053\\_3.pdf](https://ec.europa.eu/competition/mergers/cases/decisions/m7018_6053_3.pdf)

<sup>17</sup><https://www.golem.de/news/mobilfunkgipfel-united-internet-baut-sein-5g-netz-ohne-etablierte-ausruester-2006-149125.html>

<sup>18</sup><https://www.welt.de/wirtschaft/webwelt/article221982110/Chef-von-Telefonica-Deutschland-Das-Land-kann-Krise.html>



## 1.2 Methodology

Similarly, to our 2019 study concerning Iliad's 4<sup>th</sup> MNO Italian business case study, we developed herein a bottom-up mobile market model for Germany comprising of smartphone, prepaid, mobile broadband and wireless broadband subscribers. The span of the modelling period is 22 years (from 2019 to 2040). For 2019 and 2020 we used actual operator or regulator reported figures wherever available and Rewheel estimated figures for the remaining input parameters. The model projects key operational metrics, such as mobile subscribers, subscriber types, subscriber mix, average revenue per subscriber (ARPS) type, mobile service revenue per subscriber type, average mobile data usage per subscriber type and annual mobile data traffic volume for the entire market and in particular for 1&1 Drillisch for a period of 20 years, from 2021 to 2040.

The market model projections, network rollout and future spectrum presumptions feed a bottom-up revenue, gross profit, EBITDA and operating cash flow model we created for 1&1 Drillisch's mobile operations. The model comprises from the following expenditure categories: purchases used in production (including the business-critical national roaming costs), operating costs, capital expenditure and spectrum fees. The expenditure sub categories types are detailed in the Table of Content.

The business-critical national roaming costs are calculated analytically in the model. The annual national roaming costs comprise of two parts. The first and most significant part is attributable to 1&1 Drillisch's mobile data traffic carried by the national roaming partner's network due to 1&1 Drillisch's limited initial network coverage and the second part is attributable to 1&1 Drillisch's mobile data traffic carried by the national roaming partner's network due to 1&1 Drillisch's network capacity overflow. To estimate 1&1 Drillisch's network capacity overflow for a given projected subscriber base and average mobile data usage per subscriber we used herein a simplified version of Rewheel's macro cell site capacity utilization model<sup>19</sup> that was also used in our January 2019 "*Iliad's 4<sup>th</sup> MNO venture into Italy – Will it pay off?*" study<sup>20</sup>. The same model is used to estimate 1&1 Drillisch's capacity driven future spectrum needs that set the scene for presumed future spectrum acquisitions.

We first project 1&1 Drillisch's 4<sup>th</sup> MNO revenue, gross profit, EBITDA, cash flow, cumulative cash flow and payback period for the baseline scenario input projections (i.e. subscriber share per type, ARPS per subscriber type and average mobile data usage per subscriber type) by presuming BNetzA mandates a competitive national data roaming rate glide path.

Thereafter we perform a comprehensive business case sensitivity analysis. We first examine 1&1 Drillisch's 4<sup>th</sup> MNO business case payback period as a function of projected market share and ARPS. Then we examine 1&1 Drillisch's 4<sup>th</sup> MNO business case with and without 4G/5G wireless home broadband subscribers.

At the third step we examine the impact of 1&1 Drillisch's current and future spectrum holdings on mobile network capacity utilization and national roaming costs.

At the fourth step we examine the sensitivity of 1&1 Drillisch's cumulative cash flow and payback period as a function of four national data roaming rate glide paths. A current not competitive level, a fairly competitive level, a competitive level (baseline) and a very competitive level.

At the fifth step we examine 1&1 Drillisch's 4<sup>th</sup> MNO business case versus an MVNO counterfactual business case as a function of wholesale access data rate glide paths.

At the sixth step we examine 1&1 Drillisch's incremental 4<sup>th</sup> MNO business case and at the seventh and last step we examine 1&1 Drillisch's 4<sup>th</sup> MNO German business case versus Iliad's 4<sup>th</sup> MNO Italian business case.

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<sup>19</sup>[http://research.rewheel.fi/downloads/2018\\_capacity\\_utilization\\_potential\\_macro\\_site\\_grids\\_PUBLIC.pdf](http://research.rewheel.fi/downloads/2018_capacity_utilization_potential_macro_site_grids_PUBLIC.pdf)

<sup>20</sup>[http://research.rewheel.fi/downloads/Iliad\\_4th\\_MNO\\_venture\\_into\\_Italy\\_PUBLIC.pdf](http://research.rewheel.fi/downloads/Iliad_4th_MNO_venture_into_Italy_PUBLIC.pdf)