Expert Intelligence:
European Broadband Forecasts

Product Guide

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Introduction

Point Topic, the parent company of Expert Intelligence, was the first to map broadband across Europe at province level and below. We developed our European Kilometre Grid (EKG) to enable finer granularity in mapping and allow cross-compatibility across changes in European and national administrative boundaries.

Our proprietary research on broadband coverage and take-up is unique. Developed through key contracts with the European Commission and the European Space Agency, Expert Intelligence's database is now an independent product, not constrained by issues of commercial confidentiality or official policy. Clients are free to use the data for marketing, competitive analysis or forecasting.

This product builds on the European Broadband Markets product developed by Expert Intelligence. European Broadband Forecasts project FTTP, DOCSIS 3.1 and VHCN (FTTP & DOCSIS 3.1) coverage to 2030 based on a time series of 2011 - 2021 coverage and other inputs. Our base model outputs use the NUTS (Nomenclature of territorial units for statistics) classification of geographic boundaries, with alternative outputs at nation-specific administrative boundary classifications also possible. The original methodology used for this model was presented at the International Telecommunications Society conference in 2023.

Objectives

The European Broadband Forecasts product allows us to use our comprehensive time series data to forecast the deployment of high-speed fixed broadband to 2030. With the ongoing transition to gigabit-capable connectivity in Europe, our product uses real-world data and expert analysis to offer a comprehensive forecast of high-speed fixed broadband deployment until 2030, point out regional disparities and highlight market opportunities.

Our product currently covers 2022 to 2030 forecasts of technology coverage as a proportion of households, with yearly updates to input data planned, allowing us to further improve the accuracy of our forecasts to 2030.

A firm foundation for decision-making, our datasets rely on the cross-boundary NUTS classification developed by the European Commission as well as our European Kilometre Grid (EKG) to address the need for reliable, standardised data freed from national and version-specific differences in the measurement, formatting, and representation of data.

Countries Covered

The European Broadband Forecasts product covers all countries included in the European Broadband Markets product.

| Austria	Belgium	Bulgaria	Croatia	Cyprus	Czech Republic
Denmark	Estonia	Finland	France	Germany	Greece
Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg
Malta	Netherlands	Norway	Poland	Portugal	Romania
Slovakia	Slovenia	Spain	Sweden	Switzerland	United Kingdom

Methodology

Model

We use a type of logistic growth model known as the Gompertz model for our forecasts. The Gompertz model has been used in a variety of contexts, including the diffusion of technologies through societies. Characterised by its asymmetry, this kind of growth projection is particularly well suited for forecasting the diffusion of fixed broadband technologies within a population, as it represents the different stages of uptake commonly associated with technology diffusion. Our data shows that the current deployment of VHCN in Europe is following the same pattern and will continue to do so until 2030.
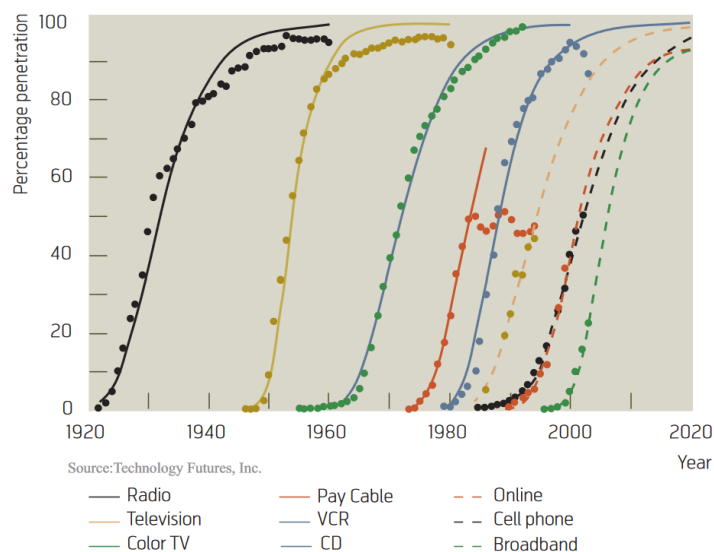
Penetration of different technologies in the US with Gompertz functions. Vanston, Lawrence & Hodges, Ray. (2004). Technology forecasting for telecommunications. Telektronikk. 4.2004.

Along with our additional data inputs, we use the European Kilometre Grid (EKG) to distribute regional data down to the square kilometre and improve the granularity of our forecasts to 2030. By using the EKG, we can estimate market size at a square-kilometre level using population and land use data. Outputs for clients may therefore be at the country (NUTS0), regional (NUTS3) and square-kilometre (EKG) level.
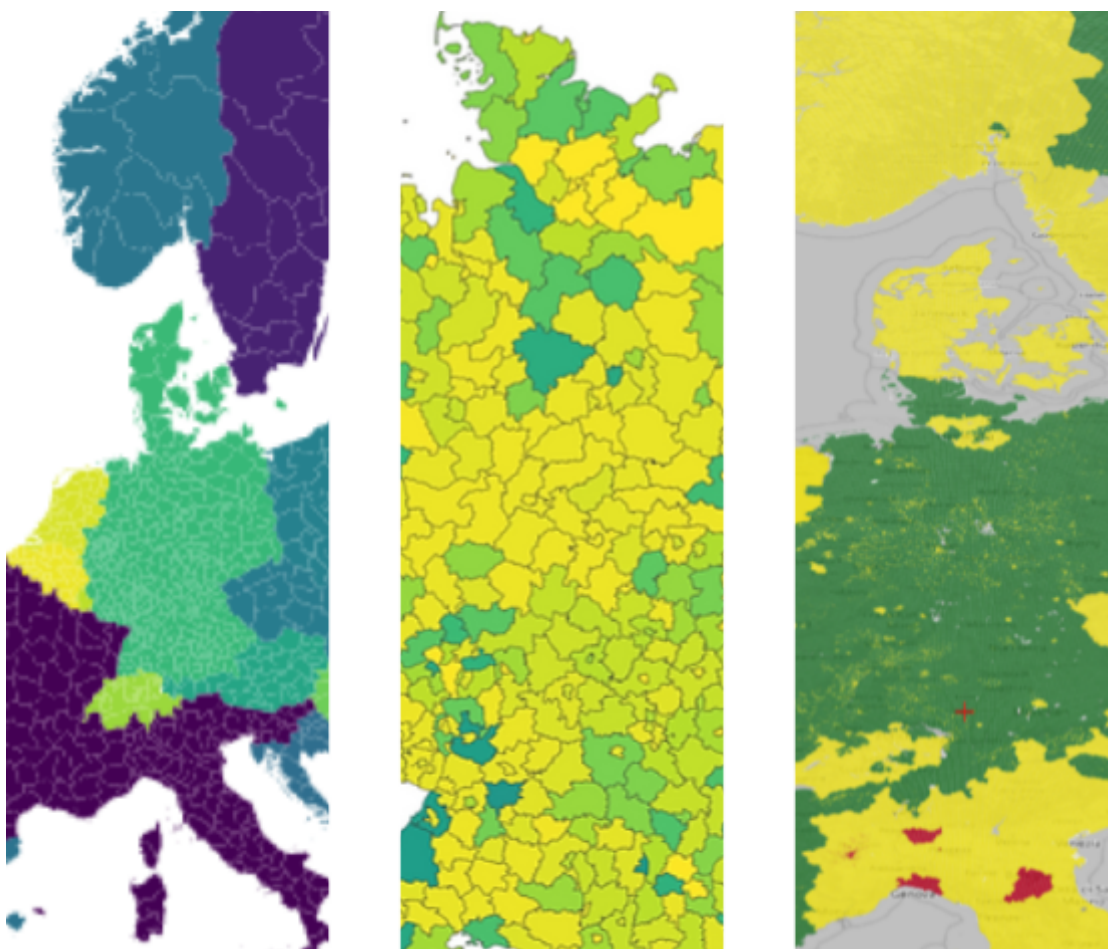
Outputs at country, regional, square-kilometre level

Scenarios

Our modelling can be adjusted and manipulated to produce different scenarios, which will have an impact on results. This is done especially regarding the inclusion and weighing of cross-national factors relating to regulation and digitalisation (discussed below). Our methodologies are transparent and easily updatable should there be newer or better data available. We can develop a scenario matching your needs, or provide you with one of our existing baseline or policy-focused scenarios.

Data Sources

European Broadband Forecasts is a model based on our European Broadband Markets product, which is the result of year-long research and cooperation by Point Topic, Expert

Intelligence's sister company, with the European Commission and European Space Agency, involving surveys of National Regulatory Authorities and broadband operators in many European countries. To find out more about European Broadband Markets, please contact us.

This product makes use of a variety of additional inputs which are scenario-dependent. These include land cover data from the 2018 Corine Land Cover programme of the Copernicus Land Monitoring Service, regulatory and policy information from the European Commission's Connectivity Toolbox and associated documents, the 2022 European Commission Digital Economy and Society Index (DESI) and other European Commission and country-specific policy documents as well as our analysis of them.

European Kilometre Grid

The European Kilometre Grid (EKG) is a $1km^2$ grid developed by Point Topic and Expert Intelligence, spanning the European continent. On top of being used in the original Broadband Coverage in Europe study as a source of demographic data, the EKG is also used in our modelling to process data, distribute data to a highly granular, cross-compatible geographic layer, as well as to allow geographic normalisation (described below) to consistent output boundaries. The EKG and associated demographic data rely on year-long research by Point Topic and Expert Intelligence, as well as projects and source data involving European Commission's Copernicus Programme, CORINE and others.

Model Metrics

Broadband metrics are forecasted as percentage of households covered. Output metrics are listed in the table below.

Metric	Type	Description
Country Code	Geographic	Country/NUTS0 code
Country	Geographic	Name of country in English
NUTS3	Geographic	NUTS3 code
NUTS3 Region	Geographic	Name of NUTS3 region in local language
Year	Date	Reporting year for data
FTTP Coverage (%)	Broadband	FTTP (Fibre-to-the-premises) coverage as a proportion of households within the area.
DOCSIS 3.1 Coverage (%)	Broadband	DOCSIS 3.1 (Data Over Cable Service Interface Specification) cable broadband coverage as a proportion of households within the area. DOCSIS 3.1 coverage may be treated as a proxy for future protocols (DOCSIS 3.x/4) which will likely be deployed before 2030. DOCSIS 3.1 coverage is capped at the footprint of the 2021 cable network for each country.
VHCN Coverage (%)	Broadband	VHCN (Very High Capacity Networks) coverage as a proportion of households within the area. VHCN is a combination of FTTP and DOCSIS 3.1 coverage, calculated with an assumption for overbuild.

FTTP

Fibre-to-the-premise refers to broadband transmitted entirely over fibre optic cables. This frees the transmission from the drawbacks of copper-based cables (interference, packet loss), allowing for nearly no degradation of performance over distance, however at the significant cost of new infrastructure being laid down to every end-user. While expensive, the roll-out of FTTP is widely considered a top priority for providing next generation connectivity across Europe and large sums of money are being invested into the expansion of FTTP coverage.

DOCSIS 3.1 (Cable) Coverage

DOCSIS 3.1 is a protocol for high-bandwidth cable coverage that allows download speeds of up to 500Mbps-1000Mbps for end-users (with upward potential of up to 10Gbps) and which will most likely be upgraded to newer versions (DOCSIS 3.X/4) by 2030. While the existing cable network is being upgraded, the growth of the overall cable footprint in Europe has been slow to nonexistent in recent years.

DOCSIS 3.1 is also being used by some networks deploying RFoG (Radio Frequency over Glass) technology over fibre infrastructure, although such deployments are commonly referred to as FTTP and not DOCSIS 3.1 coverage.

Due to this, DOCSIS 3.1 coverage for the entire forecasted period is capped at the 2021 extent of the conventional cable network as determined by our datasets.

VHCN (FTTP & DOCSIS 3.1) Coverage

FTTP & DOCSIS 3.1 Coverage – sometimes referred to as VHCN (Very High Capacity Networks). The term VHCN is commonly used in European policy documents in the context of broadband policy and the Digital Decade programme. VHCN is not forecasted as an individual metric by this model, and is instead calculated as a combination of FTTP and DOCSIS 3.1, with an assumption for overbuild (the proportion of area covered by one technology which is also covered by the other) based on UK data from our sister company, Point Topic.

Overbuild

Overbuild in the context of broadband technologies is the proportion of footprint of one technology which is also part of the footprint of another technology. While VHCN is the combined footprint of FTTP and DOCSIS 3.1, in reality both networks will occupy some of the same areas, hence an assumption for overbuild must be made when calculating VHCN. Reliable data on overbuild is scarce and will be highly variable by region. We currently use UK data for overbuild between FTTP and DOCSIS 3.1 with the goal of using European data for this in the future.

What is Coverage?

The definition of 'coverage' is not a straightforward one, both in terms of calculating the proportion of an area covered by broadband from local sources, as well as defining when

a household is covered by a particular broadband technology. A number of assumptions have to be made.

In terms of calculating the proportion of households covered from local sources, we align our assumptions with those of the European Commissions's Broadband Coverage in Europe project. Raw data collection, both from national regulators and broadband operators, assumes zero overlap. This means that, within any NUTS3 area, the broadband coverage reported by individual broadband operators is added up, regardless of whether these operators may in reality cover some of the same geographic areas. For example, if operator A covers 30% of households within a NUTS3 region, and operator B also covers 30%, we assume overall coverage in the NUTS3 is 60%. In reality, it will often be lower, as there will be overlap (operator A and B will both offer services in some of the same premises). Should two operators cover 80% of premises in a NUTS3 region each, coverage would be 100%. In reality, both operators may be avoiding the same particular area within the NUTS3 region where providing coverage is uneconomical.

Coverage is different from market share or take-up, in that a household does not need to use or be subscribed to the services of a broadband operator, connection or technology to be covered by it. A household is covered if it simply has the option of using the service, through the necessary infrastructure being present. Whether infrastructure is 'present' at a household or not is somewhat dependent on the particular situation or technology, although in general is understood to mean that the service can be provided to the household without the construction of new infrastructure and limited set-up costs to the customer or operator.

We refer to residential coverage in all instances within this report and model. Business broadband coverage is outside the scope of this project.

Usage Rights

Applications and Final Remarks

The European Broadband Forecasts product represents a reliable source of regional high-bandwidth broadband coverage forecasts to 2030, highlighting potential regional disparities and market opportunities.

Expert Intelligence is always looking to improve its products and allow for further applications for its users. We are working to continually improve this model as well as add better inputs and additional metrics. Should you wish to request fine-tuning of model inputs or additional features, please contact us.

Our base model outputs are at NUTS3 level, however we are also able to provide outputs using alternative geographic boundary classifications on demand.

Copyright Accreditation

Broadband Data

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Policy and Statistical Data

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Geographic Boundary Files

- Eurostat/GISCO (2022). NUTS Boundary Files (2006, 2010, 2013, 2016, 2021). https://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/nuts.