2023 Fixed Broadband Benchmarking Framework

Abstract overview
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umlaut Fıxed Benchmarkıng Framework 2023 – maın updates

summary of main changes

KPI Updates

- **Passive Speed Testing:** removal of less demanding categories (DL HD Video) to underline performance focus
- **Active Speed Testing:** adjusting # of used sockets to match mobile network testing methodology
- **Latency:** improving network latency measurements by correcting for local WiFi latency
- **Stability:** increasing scope of tested web pages

Algorithm Updates

- **Line classification:** based on Max DL speed capability, derive country specific range of performance segment to filter candidate lines
- **Robustness:** Introduction of even week weighting mechanism

Scoring Updates

- **Weights:** More performance–orientation, increasing weight on P90 speed KPIs. Increasing relative weight of UL compared to DL
- **KPI Targets:** General update of KPI Target settings in view of new focus on performance segment

Benchmarkıng, our Terrıtory.
The Industry Standard.

Our top priority is to fairly and transparently assess the global development of networks, push their quality and performance with our benchmarks and ultimately achieve improvements for every customer.

Our benchmarks are positioned to be a unique measure for management and supervisory boards to compare their networks with others, and for customers to make better decisions for their subscriptions.

We can apply our unique scoring methodology to fixed line ISPs globally.

With crowdsourcing umlaut's unique app–based approach is used to assess network performance of both mobile networks and WiFi.

Preface

The umlaut Benchmarking Framework Basis.

The umlaut Benchmarking Framework is based on a unified measurement method for true international comparability combined with the umlaut–Score approach.

Key features:

- International comparability
- End customer relevance
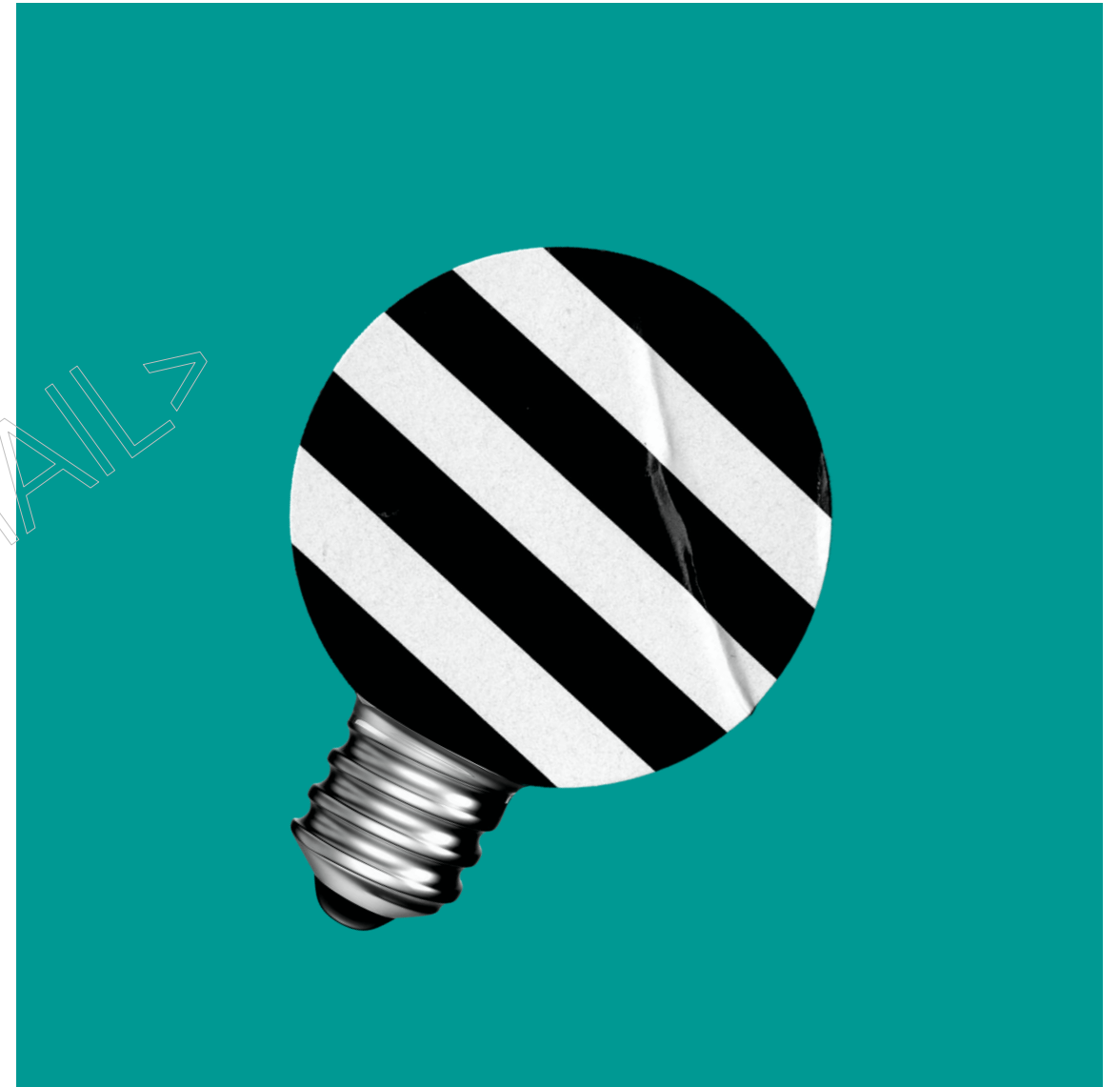- Drill–down capability
- Transparency

Rationale
How to stay focused?

Measuring performance means collecting a vast multitude of different performance indicators, so the important aspects can be easily missed. The question is how to stay focused and communicate results smoothly?

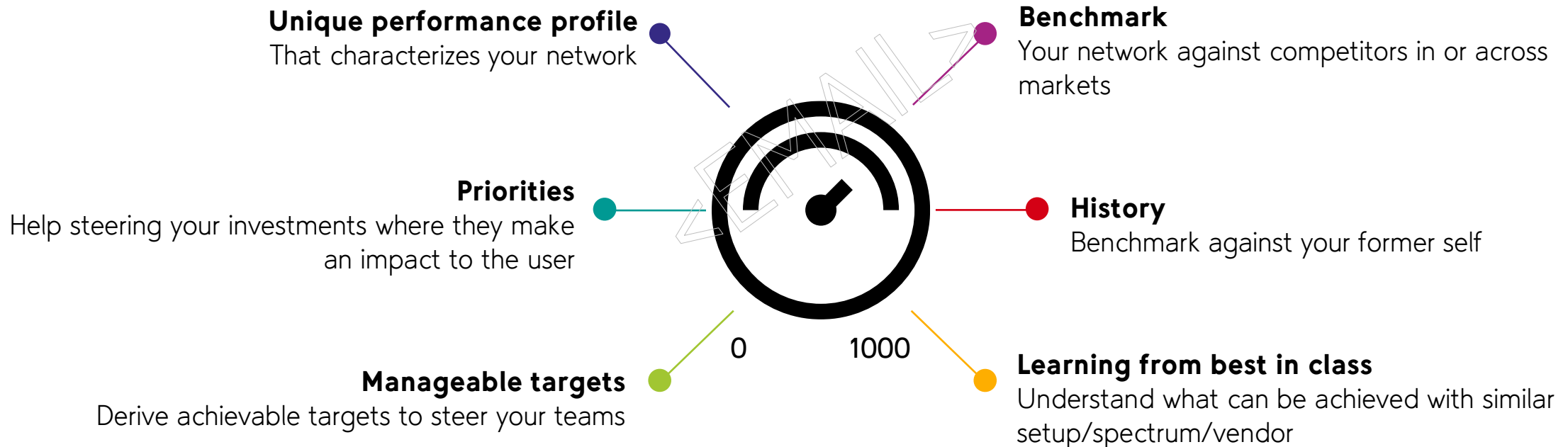The umlaut Score, as a management tool, is umlaut's solution which:

- aggregates the complete set of KPIs into a single score figure, preserving the drilldown capability

- features implicit weighting of environment, services and KPIs and comparability on national and international level ...

Umlaut Score.
As a Management Tool.

Unique performance profile
That characterizes your network

Priorities
Help steering your investments where they make
an impact to the user

Manageable targets
Derive achievable targets to steer your teams

0   1000

Benchmark
Your network against competitors in or across
markets

History
Benchmark against your former self

Learning from best in class
Understand what can be achieved with similar
setup/spectrum/vendor
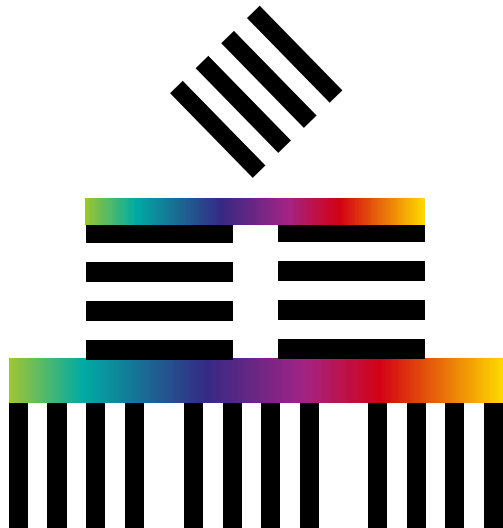
Umlaut Score Principles
Building Blocks.

The umlaut score delivers a robust scale to assess network quality and performance. It is coupled with a unified measurement methodology for true international comparability.

Modular Score Approach

Unified Measurement Methodology

Consistent Reporting

Concept Overview

Characterized by

- Defined weighting between performance aspects
  - Download speeds
  - Upload speeds
  - Round Trip Time Latency
  - Stability
- Relation of observed performance to typical end–user services
- Fixed maximum score

Properties

The **umlaut Fixed Broadband Score** covers a crowd–sourcing based assessment of ISPs obtained through the observation of end user performance on handsets connected to fixed line ISPs via WiFi.
The score works based on the identification of individual subscriber lines and utilizes their speed capabilities to identify market segments.
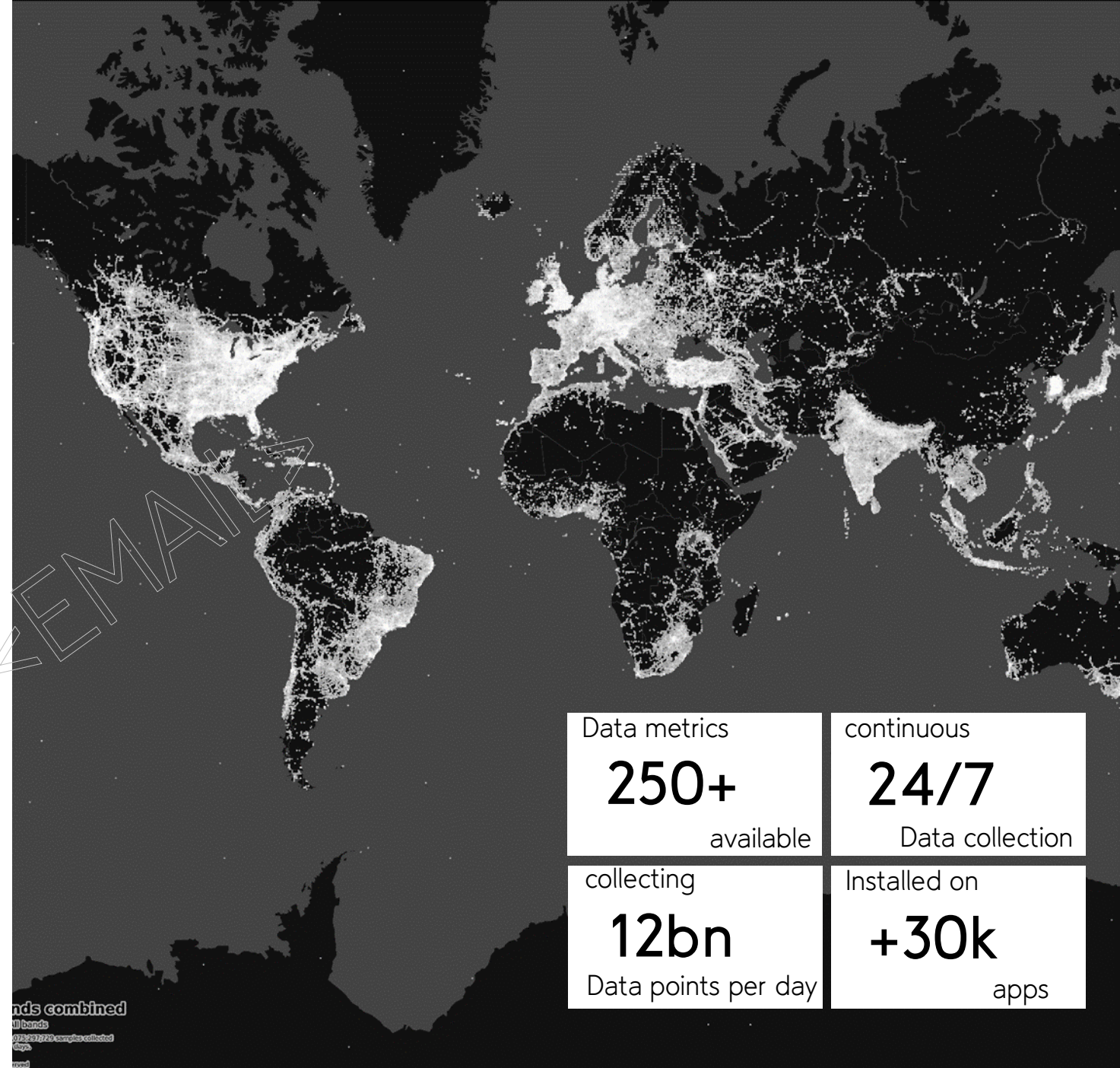
It also provides means to take into account the different geographical distribution of data from different ISPs to ensure a fair comparison.

umlaut crowdsourcing
Global footprint.

- Active and Passive data collection directly on end–user smartphone devices,

- Global footprint with common big data analytics approach applied worldwide

- Observing passively activities on the smartphone, collecting 250+ KPIs

- umlaut SDK is integrated in 30000+ applications worldwide

- Footprint reached is typically around one in any 1,000 inhabitants

Data metrics	continuous
250+ available	**24/7** Data collection
collecting	Installed on
12bn Data points per day	**+30k** apps

Benchmark Scope

Assessing ISPs based on end–user experience and technical capability to serve users connecting through Smartphone+WiFi.

The methodology and scoring are be based on umlaut's recent 2023 benchmarking framework update.

The benchmark is access–technology agnostic, yet it aims at reducing the influence of legacy lines and focus the comparison on ISP's performance products, where actual choice exists for the customer caring about performance.

To do that, umlaut has implemented a country specific filtering approach, eliminating data from lines that range below a threshold derived from market average from the evaluation. The methodology foresees no further splitting of the ISP's products into different categories.
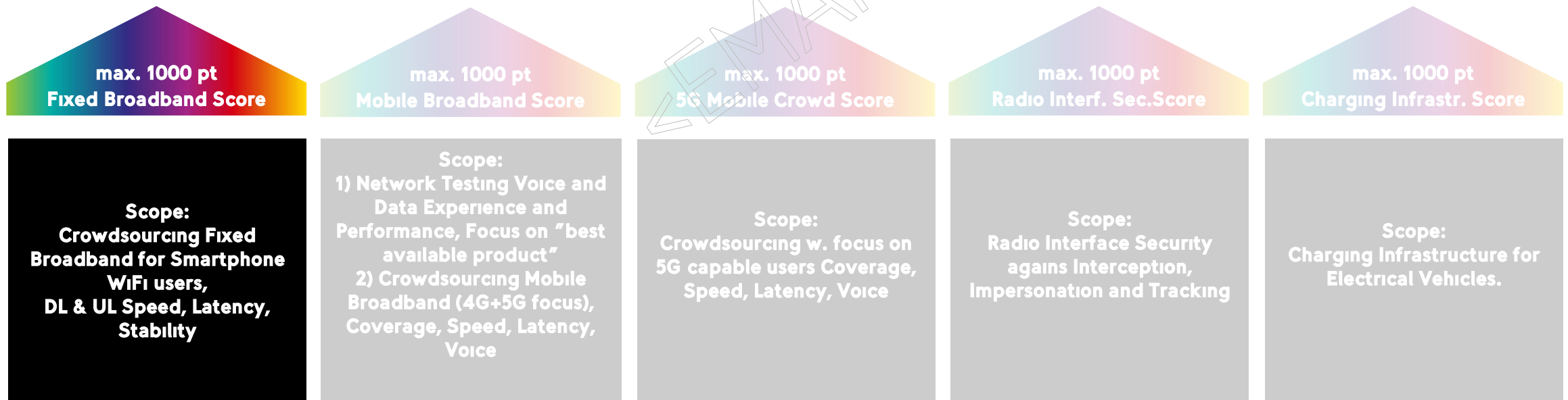
umlaut Score Family.
Modularity and Hierarchy.

umlaut delivers user experience and performance ratings for the communications and other industries.
The family of umlaut score products is depicted below and constantly being expanded.
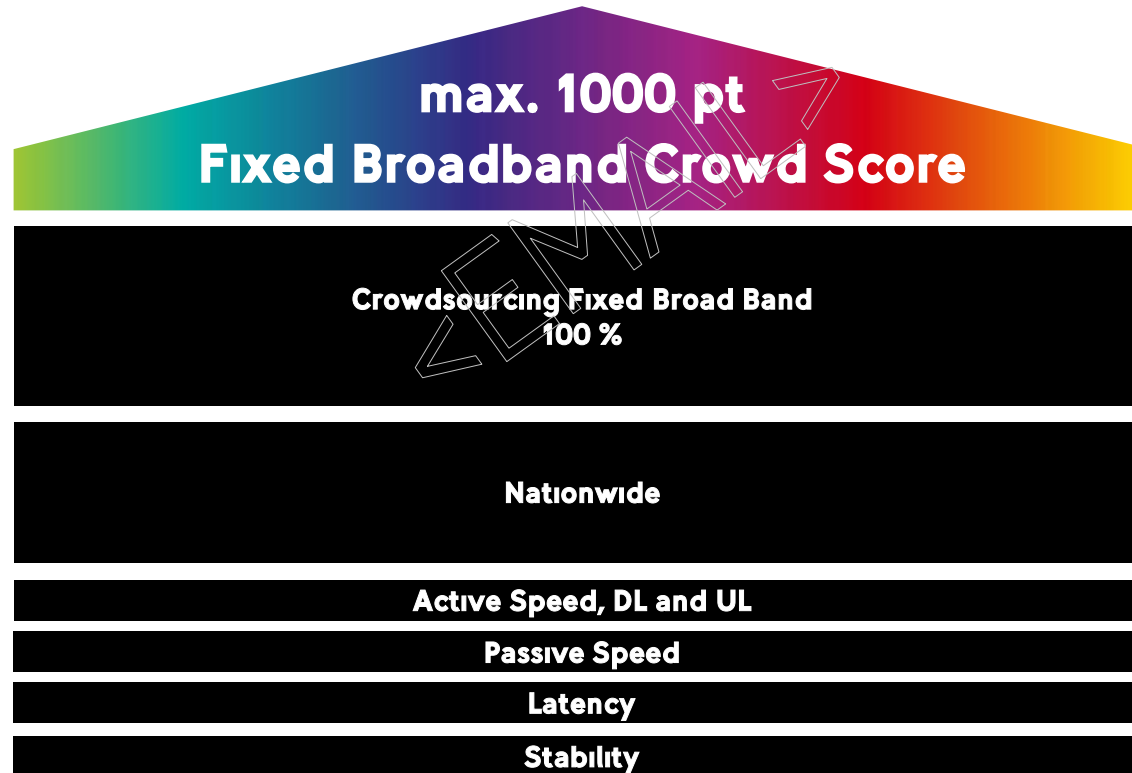
This document focuses on the Fixed Broadband Score.

max. 1000 pt **Fixed Broadband Score**	max. 1000 pt **Mobile Broadband Score**	max. 1000 pt **5G Mobile Crowd Score**	max. 1000 pt **Radio Interf. Sec.Score**	max. 1000 pt **Charging Infrastr. Score**
Scope: Crowdsourcing Fixed Broadband for Smartphone WiFi users, DL & UL Speed, Latency, Stability	**Scope:** 1) Network Testing Voice and Data Experience and Performance, Focus on "best available product" 2) Crowdsourcing Mobile Broadband (4G+5G focus), Coverage, Speed, Latency, Voice	**Scope:** Crowdsourcing w. focus on 5G capable users Coverage, Speed, Latency, Voice	**Scope:** Radio Interface Security agains Interception, Impersonation and Tracking	**Scope:** Charging Infrastructure for Electrical Vehicles.

umlaut Score Modules

Modularity of Fixed Broadband.

max. 1000 pt
Fixed Broadband Crowd Score

Crowdsourcing Fixed Broad Band
100 %

Nationwide

Active Speed, DL and UL

Passive Speed

Latency

Stability

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