

IMT-2020 SYSTEM TYPES

There are two different types of network structure: Homogeneous networks and Heterogeneous networks. A homogeneous network structure consists of a single base station type. It can be a macro, a micro or an indoor base station. A heterogeneous network structure consists of combination of at least two base station types. For a large area or nationwide studies, a combination of network structures may be required.

In designing IMT-2020 systems for SEAMCAT scenario, user can consider three different types of network structure: Macro system, Micro system and Hybrid system as shown below. There are number of predefined systems and user can define his own system to be used in SEAMCAT study if none of the predefined systems are not appropriate.

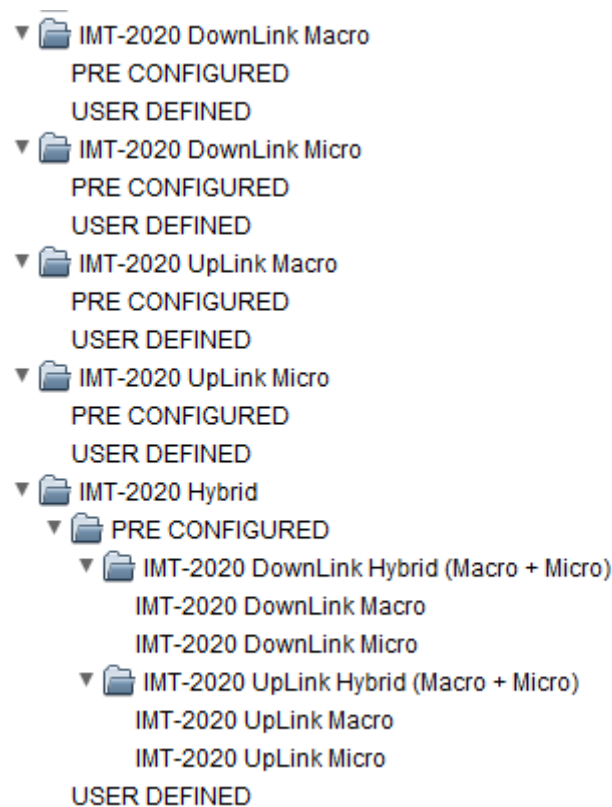


Figure: Overview of IMT-2020 system types preconfigured in SEMCAT Systems library

Macro system

Macro system represents cellular system using macro base stations used for seamless wide area coverage. Macro base stations are often deployed above roof-top. Cell sizes in IMT networks can vary considerably depending on the deployment (urban, suburban, rural), environment, carrier frequency and the base station's type. In Macro system in SEAMCAT user can select system for simulation as either UpLink or DownLink.

Micro system

Micro system is an element system which consists of micro cell cluster which can be considered as standalone system or can be fitted within macro system configuration. In the urban environment, micro base stations are generally deployed below roof-top. DL/UL

Hybrid system

Hybrid system in SEAMCAT is composed of macro cells and microcells. Micro cell clusters are distributed in a macro cell coverage area. Each cluster consists of two cells which are positioned randomly in macro cell sector. For hybrid system to be feasible cell radius of macro system have to be enough to fit IMT-2020 micro cells. There are two predefined IMT-2020 hybrid systems IMT-2020 DownLink Hybrid Macro + micro and IMT-2020 UpLink Hybrid Macro + micro. For Hybrid systems SEAMCAT shows characteristics of Aggregate system and System layout. To see or edit characteristics of subsystem user need to expand tree node and chose individual system as shown below.

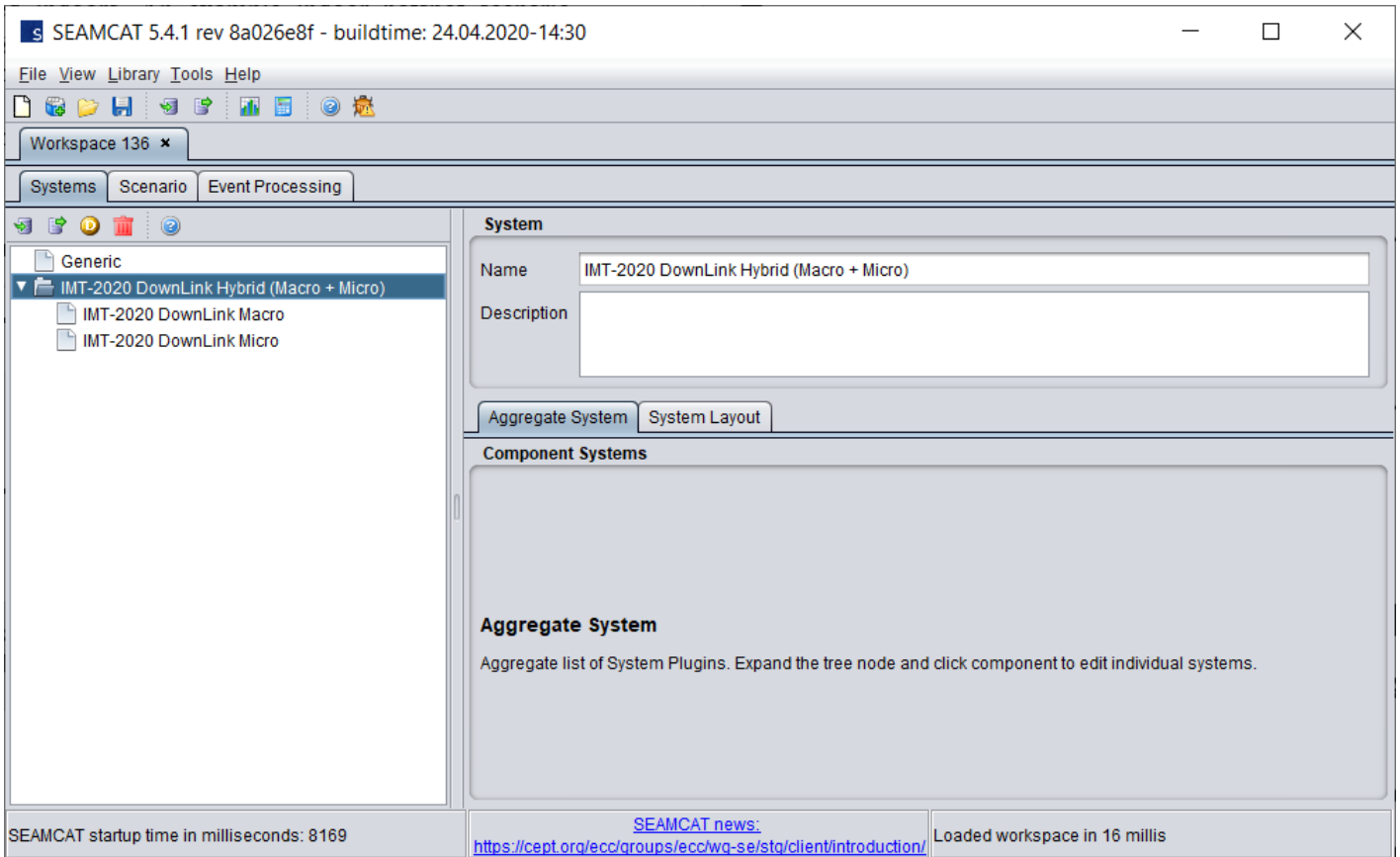


Figure: Overview of the IMT-2020 hybrid system in SEAMCAT showing individual subsystems

Revision #1

Created 2026-04-21 07:18:44 UTC by ECO TECH

Updated 2026-04-21 07:20:29 UTC by ECO TECH