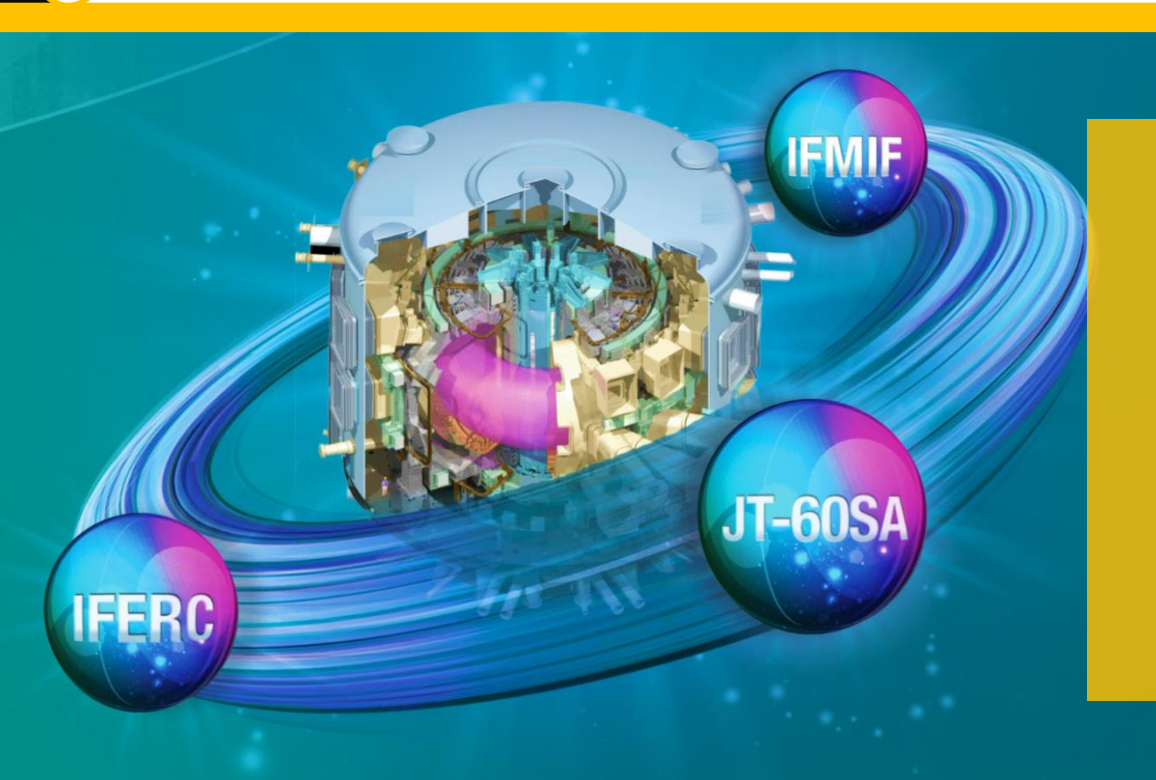


ITER

Broader Approach

Antonio De Lorenzi





EU - JAPAN

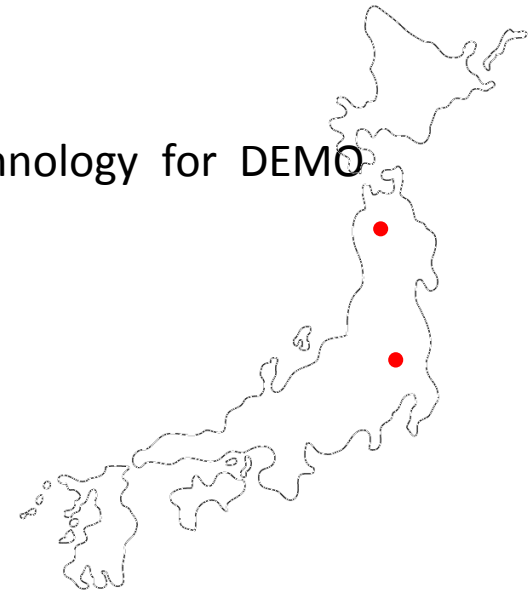
Belgium
France
Germany
Italy
Switzerland
Spain

The resources for the implementation of the Broader Approach are largely (88%) volunteered by several participating European countries; 12% is under the Euratom Budget

EU – 339 M€ - 2005
JP – 346 M€ - 2005

The **Broader Approach** agreement (2007) between **Euratom** (European Atomic Energy Community) and **Japan**

for complementary activities to ITER
for accelerating R&D and advanced technology for DEMO



IN-KIND on a voluntary basis

The 3 projects of BA



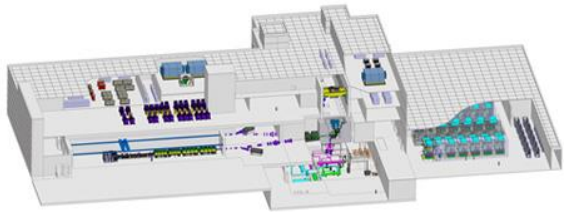
STP «Statellite Tokamak Programme»

from JT-60 to **JT-60 SA** (Super Advanced)

the satellite facility to investigate ITER and DEMO relevant scenarios, in the break-even region ($n\tau T \sim 10^{21}$)

High H&CD power (10 MW NNBI - 24MW PNIB - 9 MW ECRF), D plasma, 100s, SC magnets, MHD active control

<http://www.jt60sa.org>



IFMIF «Int.l Fusion Materials Irradiation Facility»

To produce sufficient dpa/y (>20 in 0.5 l) generating 14 MeV neutrons (D+T reaction) on samples of material used in a fusion reactor. The neutron flux is obtained with 2x125 mA deuteron beams @ 40 MeV on two liquid lithium targets

<http://www.ifmif.org>



IFERC «Int.l Fusion Energy Research Center»

Three sub-project: DEMO design and R&D Coordination Center; Computational Simulation Center CSC; ITER Remote Experimentation Center REC

<http://www.iferc.org/>

The Eu contribution

A detailed 3D cutaway diagram of the JT-60SA tokamak. The central vacuum vessel is shown in a light blue color, surrounded by a complex structure of yellow and blue components representing the toroidal field (TF) magnet and its support structure. The diagram illustrates the intricate engineering of the fusion reactor, including the cryostat and various support systems.

STP JT-60SA - the Toroidal Field (TF) magnet and all coil current leads, the cryoplat, most of the cryostat, and magnet and H&CD power supplies.

IFMIF the prototype accelerator, IFMIF design, test module development.

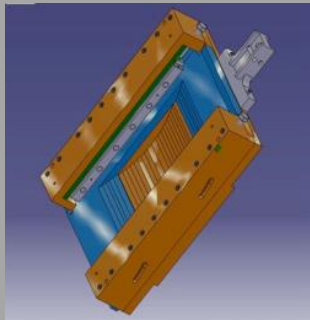
IFERC the provision of the Helios supercomputer for CSC.

The Italian contribution 1

ENEA

JT-60SA

IFMIF



part of the **magnets** and **feeding system**

reference concepts of the **lithium target**,

the target's remote maintenance and assembly

and the lithium corrosion-erosion of the

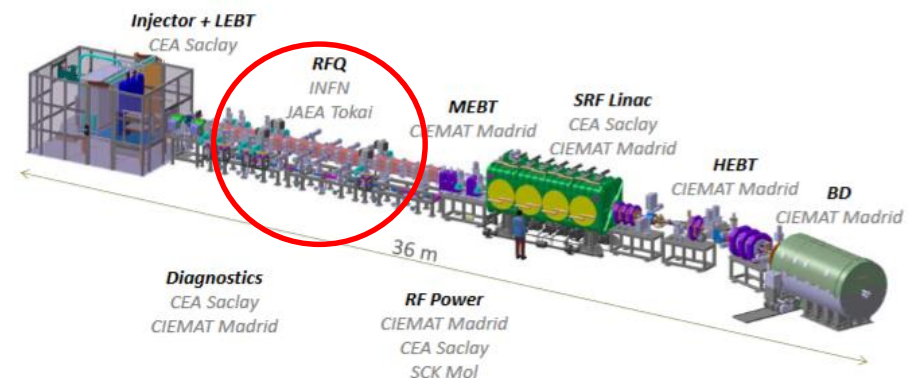
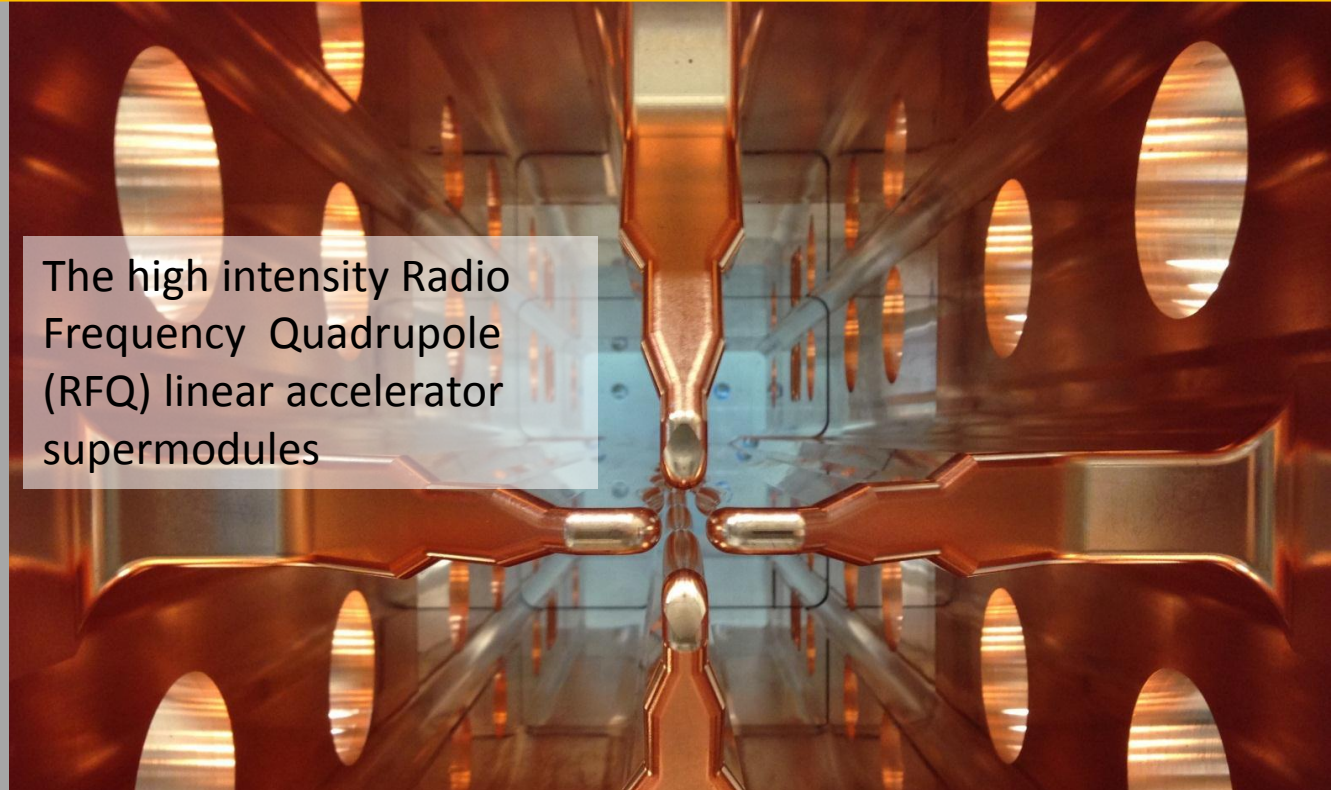
target's structural materials

The Italian contribution 2

INFN

IFMIF

The high intensity Radio Frequency Quadrupole (RFQ) linear accelerator supermodules

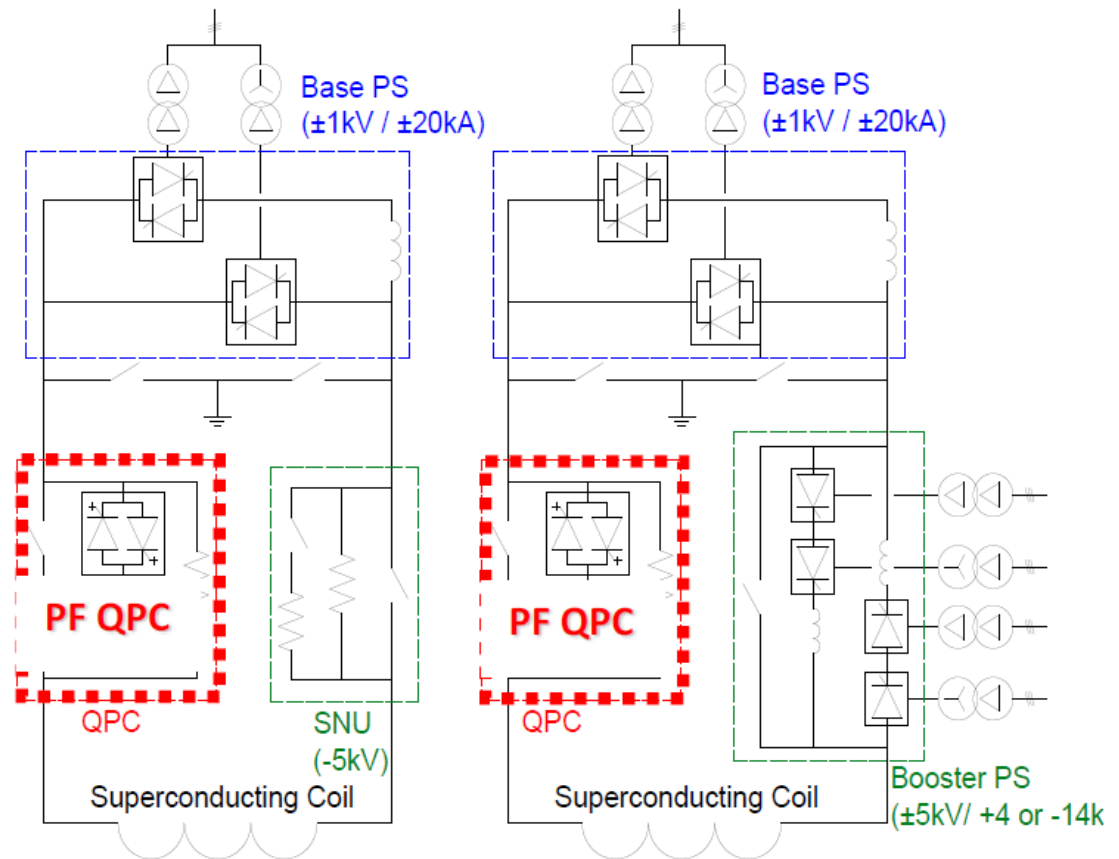


The Italian contribution 3

CNR-RFX

JT-60SA

The 10 “poloidal” circuits of JT-60SA, with the protection unit highlighted. They will operate at 20kA / 4.2 kV



Fast protection systems for superconducting magnets
Power supplies to **control Resistive Wall Mode**