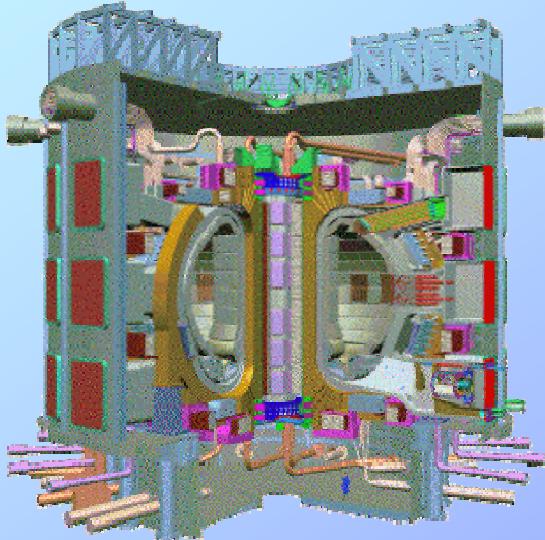




EUROPEAN
COMMISSION

Community Research

The European Joint Undertaking for ITER and the Development of Fusion Energy (*Fusion for Energy*)



Stavros Chatzipanagiotou

**Implementation of the European Legal Entity for ITER
European Commission**



Where are we with ITER?

- **In November 2000 the Council authorised the Commission to start negotiations**
- **Consensus on building ITER in Europe reached in June 2005**
- **Rapid progress made towards preparing the ITER Agreement**
- **Last meeting of negotiators took place in Jeju, China in November 2005**
- **Meeting of legal experts in Barcelona last week resolved most remaining issues**



Tentative ITER Timetable

- **Political level meeting (“P meeting”) to be held on 1 April in Tokyo**
- **Ministerial meeting to initial agreement to be held on 24 May in Brussels**
- **Ratification of the agreement by the seven parties**
- **Official signature of the agreement in October-November 2006...?**
- **Start of ITER Organisation in 2007...?**



Implications for Europe

- **Each party to the ITER agreement needs to establish a “Domestic Agency”**
- **Domestic Agencies provide ITER with the in kind, cash and human resources**
- **As host party, Europe makes the largest contributions to ITER**
- **In parallel, Europe has agreed to Broader Approach projects with Japan**
- ***Need a new dynamic organisation to deliver on these commitments...***



Towards a New Organisation

- **“Briscoe” report adopted by CCE-FU in Nov. 2005 used to define the general scope**
- **A Joint Undertaking under the Euratom Treaty identified as the most effective means**
- **First draft of Commission proposal and statutes presented to CCE-FU in December**
- **Scope agreed and CCE-FU provided input for several improvements of the proposal**
- **Since New Year, intensive negotiations with other Commission departments on proposal**
- **Revised proposal agreed at CCE-FU meeting in February**



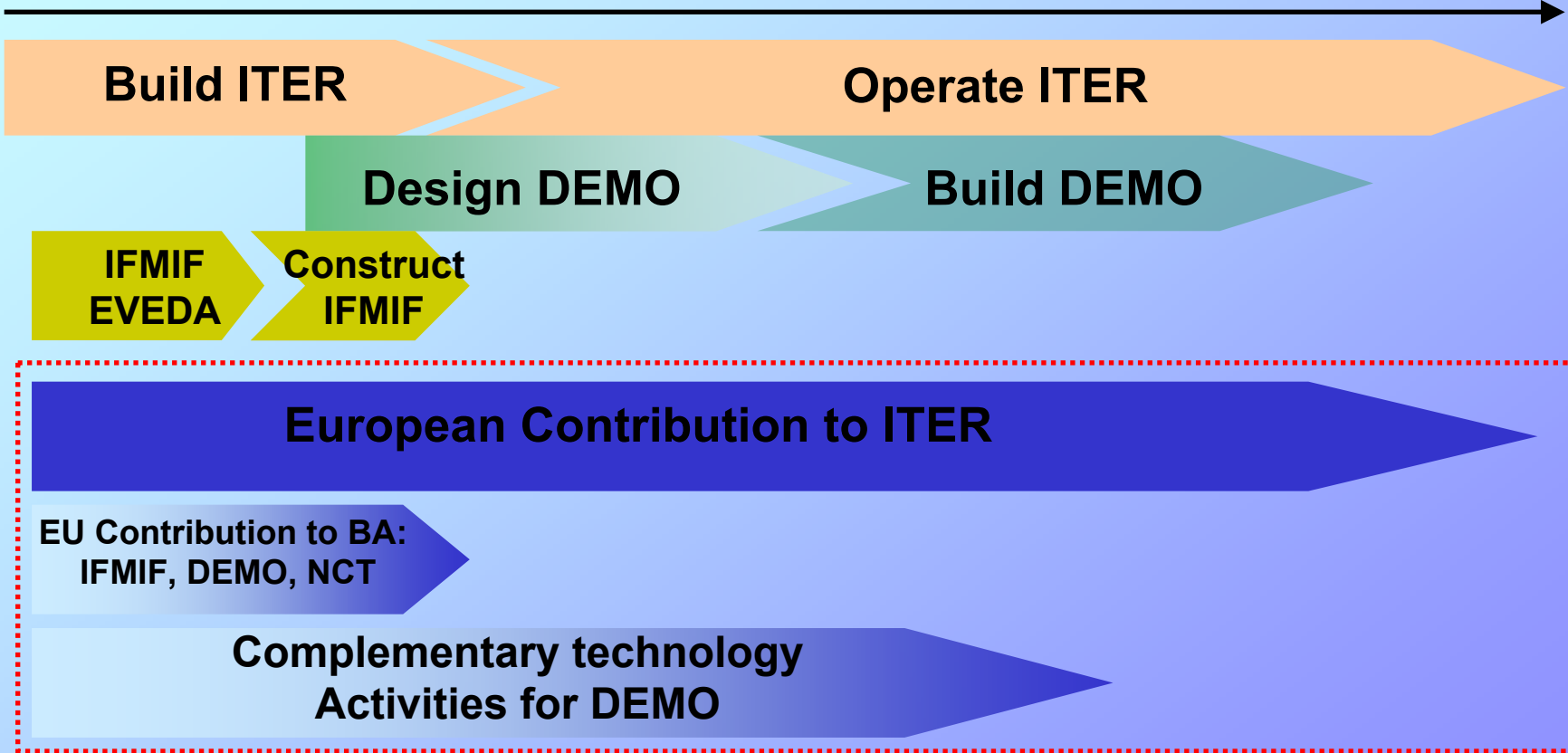
Guiding Principles

- **Effectiveness** – rapid decision making: small executive body
- **Accountability** – effective and transparent mgmt.: Financial Regulation and Audit Unit
- **Participation** – involvement of fusion community via Board / Sci. Prog. Boards
- **Transparency** – decision making process and Financial Regulation rules
- **Synergy and Complementarity** with the European fusion programme and its elements (EFDA, Associations, etc) and the Commission (with the CCE-FU) ensuring overall coherence



The Fast Track to Fusion

35 Years



Review of JU after 8-10 years



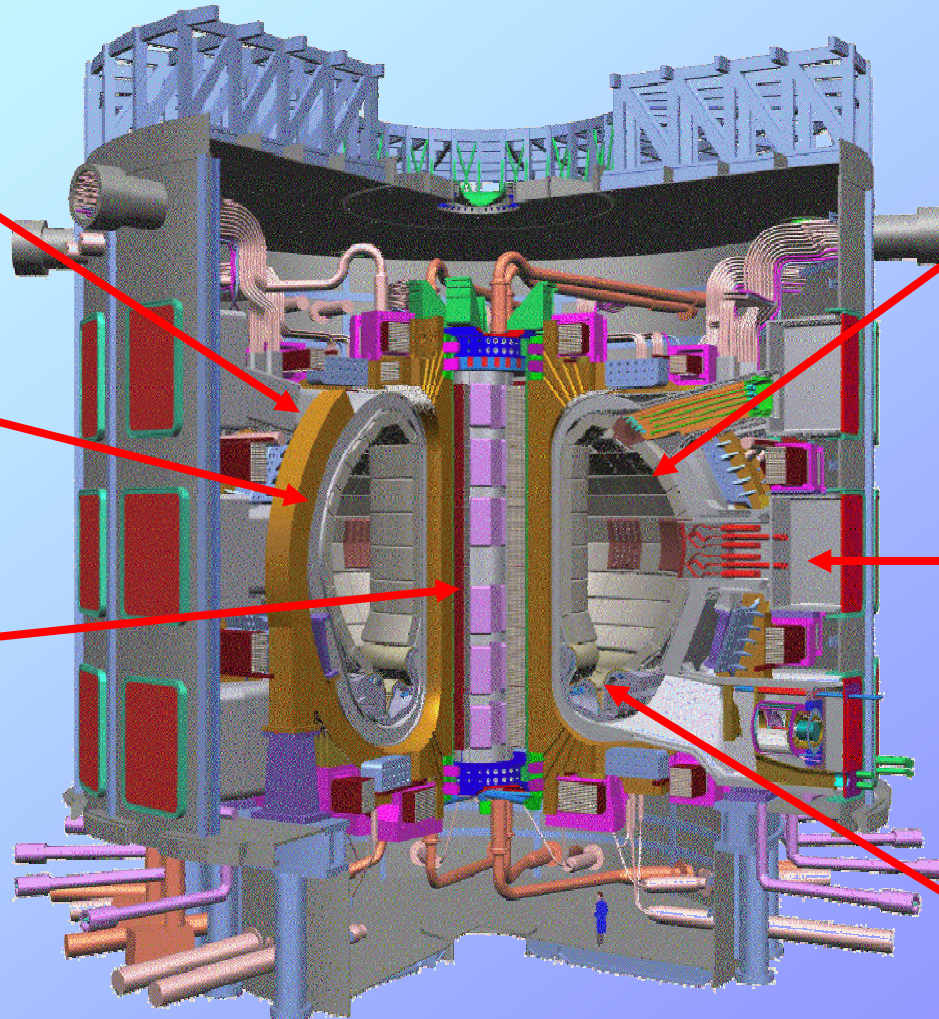
Objectives and Activities

ITER

- **As the designated European Domestic Agency for ITER it will:**
 - **Provide components, equipment, materials, etc.**
 - **Support scientific and technological R&D in support of ITER construction**
 - **Manage procurement and Quality Assurance**
 - **Arrange to make European staff available to ITER**
 - **Interface with the ITER Organisation**
 - **Provide European financial contribution (cash)**
 - **Oversee the preparation of the ITER site**
 - **Oversight of ITER activities**
 - **Prepare and co-ordinate EU participation in ITER operation**



EU Components for ITER



**Toroidal
Field Coil**
Nb₃Sn, 18 coils

Vacuum Vessel
9 sectors

**Central
Solenoid**
Nb₃Sn, 6
modules

**Blanket
Module**
421
modules

**Additional
Heating**
IC, EC, NBI

Inner Divertor
54 cassettes

+ Diagnostics
Remote Handling
Tritium Plant
Pumping/Fuelling
Power Supplies...



Objectives and Activities

Broader Approach

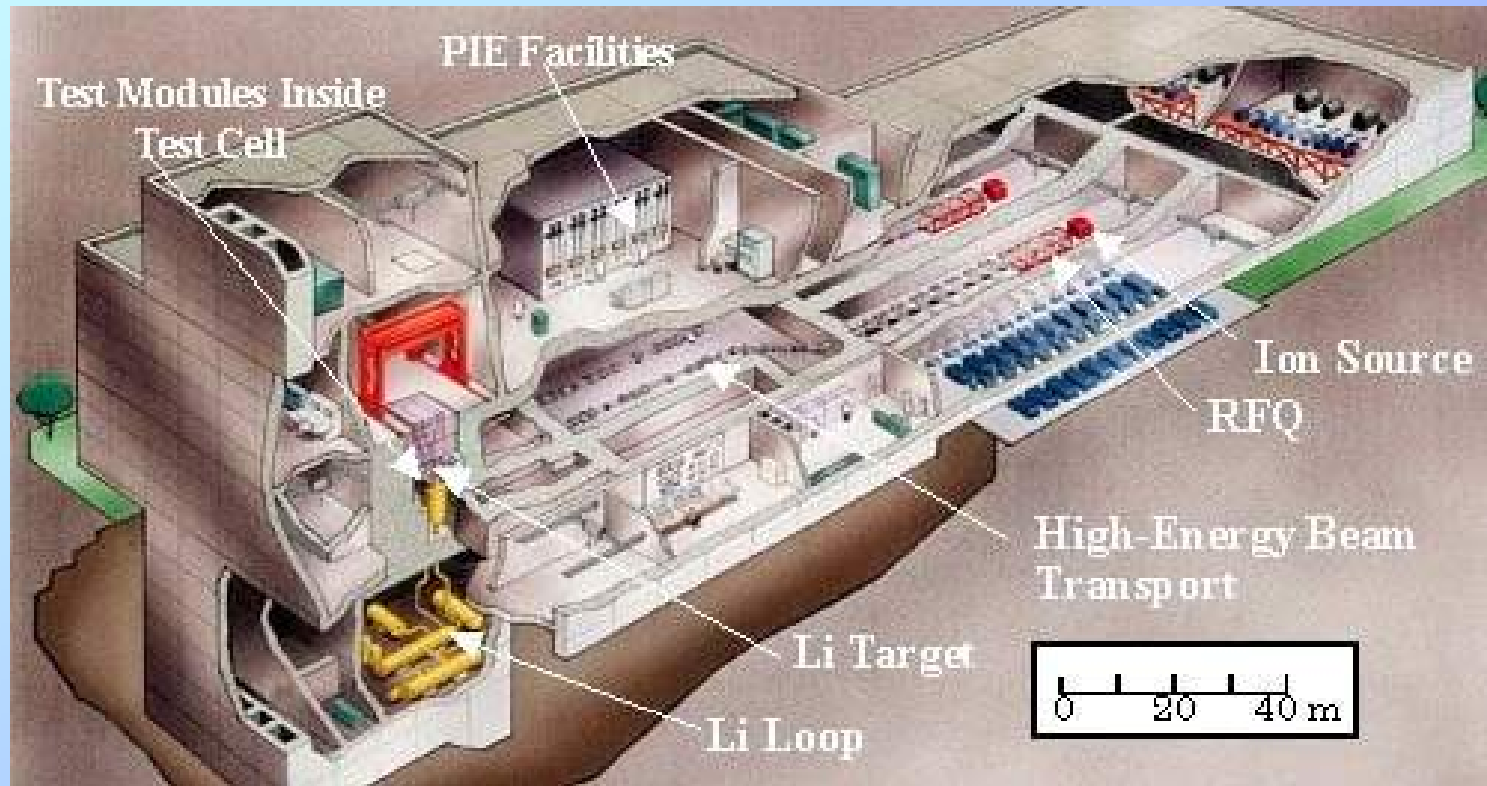
- **Broader Approach envisaged to consist of three main projects:**
 - **International Fusion Materials Irradiation Facility (IFMIF -EVEDA)** – Produce a detailed complete design for IFMIF, including validating R&D, which can allow construction to proceed when decided;
 - **Satellite Tokamak (NCT)** - Upgrade JT60 as a superconducting machine and coordinate exploitation in order to address key physics issues for ITER/DEMO
 - **International Fusion Energy Research Centre (IFERC)** – Comprising a DEMO design, research and development centre, a supercomputing centre devoted to modelling ITER/DEMO performance and an ITER remote centre to be tested on the Satellite Tokamak



Objectives and Activities

Broader Approach

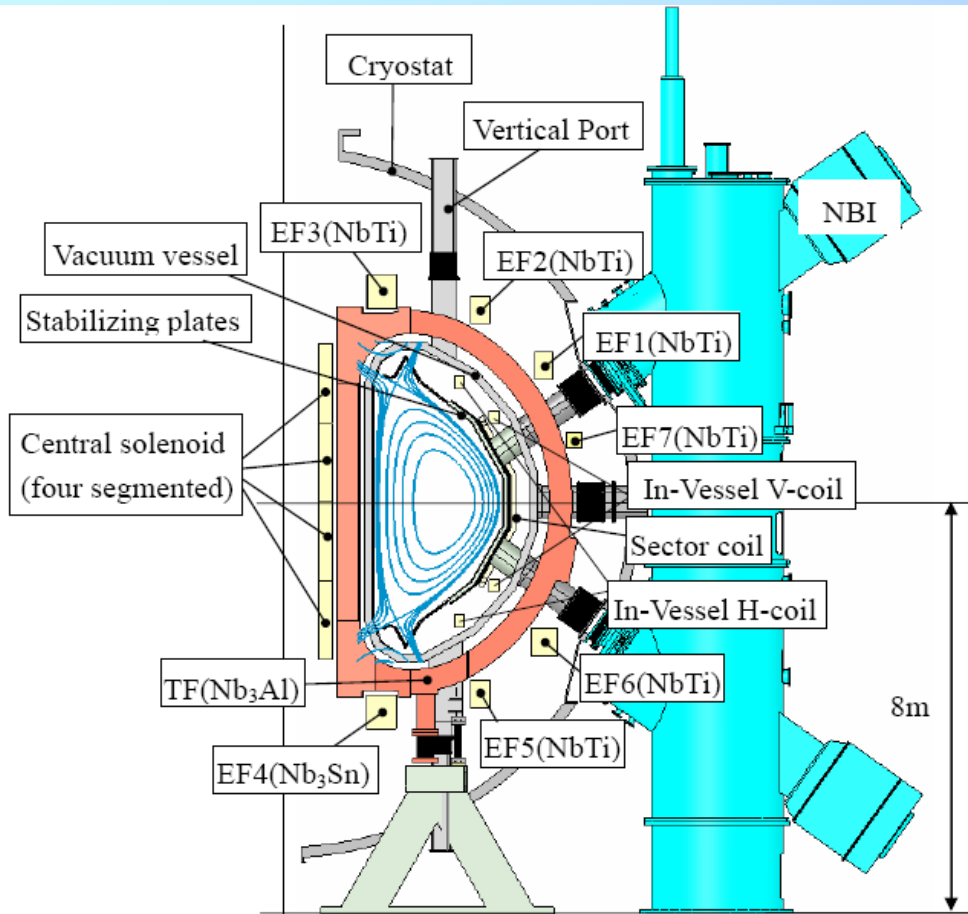
3D view of IFMIF main building





Objectives and Activities Broader Approach

NCT cross-section and main plasma parameters



NCT Parameters	
Plasma current	5.5 MA
Toroidal field	2.8 T
Plasma major radius	3.0 m
Plasma minor radius	1.1 m
elongation κ_{95}	1.8
triangularity δ_{95}	0.52
Flat top	100 sec (8 hours)
Heating power	25 MW



Objectives and Activities

Broader Approach

- **As the designated Implementing Agency for the Broader Approach the Joint Undertaking will:**
 - **Provide components, equipment, materials though voluntary contributions etc.**
 - **Prepare for and coordinate European participation in the implementation of joint projects**
 - **Support scientific and technological R&D in support of Broader Approach activities**
 - **Provide the Euratom financial contribution to Broader Approach Projects**
 - **Arrange to make European staff available**



Objectives and Activities

DEMO

- To prepare for the a demonstration fusion reactor (DEMO) the Joint Undertaking will implement a programme of activities
- DEMO programme to be implemented progressively taking into account the activities within EDFA and other parts of the fusion programme
- *Fusion for Energy* will give priority to the activities associated with the implementation of ITER and Broader Approach
- Review of *Fusion for Energy's* activities foreseen towards end of ITER construction phase (typically 8-10 years)

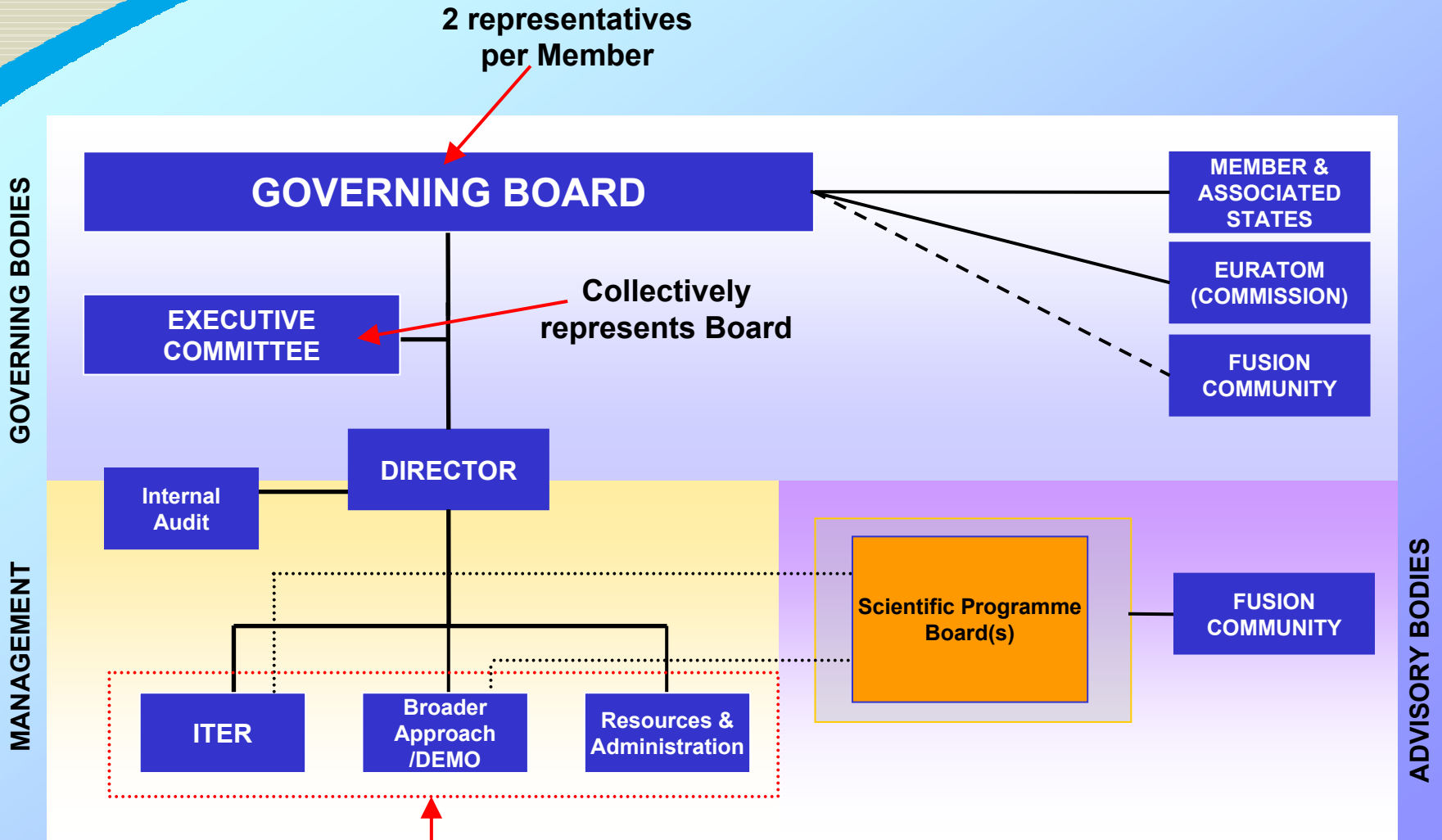


Ensuring Coherence

- **Important to highlight that the JU will be a new instrument of the fusion programme alongside EDFA and the Contracts of Association**
- **Its activities will fit coherently into the fusion work programme defined by the Commission taking into account the advice of the CCE-FU**
- **Its project plan and work programmes will be adopted by Governing Board together with the input of the Scientific Programme Board(s)**
- ***All of the above should ensure that the activities of the Joint Undertaking complement those other activities ongoing in the fusion programme***



Organisation



Example structure (to be further elaborated)



Governing Board

Who are they?

- Two representatives designated by each Member, one of which shall have scientific / technical expertise
- Chairman appointed for 2 years renewable once

What do they do?

- **Oversee all activities of the JU, including:**
 - Appoint Director
 - Adopt Financial Regulation
 - Adopt rules of intellectual property rights
 - Appoint Committee Members
 - Adopt Work Programmes
 - Adopt implementing rules for staff
 - Adopt annual budget, including staff complement

Meets at least two times / year



Executive Committee

Who are they?

- **13 members nominated collectively by the Board amongst persons of recognised standing**
- **Rotation of $\frac{1}{2}$ of the members every 2 years**
- ***Nine votes in favour required for decisions***
- **Chairman appointed for 2 years renewable *once***

What do they do?

- **Approve the award of contracts as delegated by the Board**
- **Comment and make recommendations on Work Programmes, Resource Estimates...**

Meets at least six times per year



The Director

Who is he?

- **Appointed by Board on proposal by Euratom for term of five years, extendable after evaluation for a further period of five years**

What does he do?

- **Chief Executive Officer and Legal representative (signs contracts)**
- **Responsible for day-to-day running of the organisation**
- **Appoints and supervises staff**
- **Prepares Work Programmes, Resources, Budgets, Annual Activity Reports**
- **Implements sound financial management and internal controls**



Scientific Programme Board(s)

Who are they?

- Members designated by the Board

What do they do?

- Advise on the scientific and technical content of the Work Programmes and their progress
- Ensure coherence in the scientific and technical areas of the JU's activities with the overall European fusion programme

Meets as needed



Staffing

- **All staff to be employed and paid for by the Joint Undertaking under the authority of the Director**
- **Uniform application of Conditions of Employment for Officials and Other Servants of the EC:**
 - **Current Euratom/Commission Officials → JU Officials**
 - **Others (non Euratom/Commission) → JU Officials**
 - **All types of positions open to everybody**
 - **Non Euratom/Commission can have management posts**
- ***(No possibility of a repeat of the JET situation)***
- **Subject to performance, all Staff can remain working there as long as the Undertaking exists *and in relation to its needs***



Resources

- **The Joint Undertaking's resources will be provided by four sources:**
 - **Euratom contributions through the Framework Programmes**
 - **Annual membership contributions from other Members**
 - **Voluntary contributions (e.g. for Broader Approach)**
 - **Additional resources under terms agreed with Board**
- **Total annual membership contributions are calculated on the basis of the resources needed for administration**
- **Total amount of annual membership contributions shall not exceed 10% (estimated at €4-5 million per year) of the annual resources for administration**



Financial Regulation

- **Since they proved effective, the JET Financial Regulations will be used as a model for *Fusion for Energy* and will be adopted by the Board**
- **Financial Regulations also define inter alia:**
 - **Presentation and structure of all financial documents**
 - **Procedure for adoption of the annual budget**
 - **Procedures for the award of contracts**
 - **Ceilings for award of contracts (Director and Committee)**
 - **Governing Board (0-10% of contracts)**
 - **Executive Committee (50-80% of contracts)**
 - **The Director (10-25% of contracts)**
 - **All other accounting procedures**



Financial Instruments

- ① **Awarding of procurement contracts for:**
 - **ITER in kind contribution**
 - **Broader Approach in kind contribution**
 - **Some activities in preparation for DEMO**

- ② **Awarding cost-sharing contracts (including in some cases 100% support) for specific scientific and technological R&D deliverables**
 - ***To be detailed in the Financial Regulation...***



Tentative Timetable

- **February 2006 – revised draft to be translated and Commission decision prepared**
- **March 2006 – Process for Commission Decision and transmission to Council**
- **March – September 2006 – Negotiations with the Council**
- **October 2006 – Council Decision to formally establish the Joint Undertaking**
- **Start of *Fusion for Energy*...**



Preparations

- **After the Commission adopts the Joint Undertaking proposal, preparatory measures needed to ensure that it starts by end 2006**
- **Propose to establish an Interim Governing Board (CCE-FU) and a Preparatory Group to assist in preparing:**
 - **Rules of Procedure for Board and Committee**
 - **Financial Regulation, IPR rules, etc...**
- **Selection procedures for the Director and professional staff should start before the Summer (see next presentation)**



Conclusions

- **We are at an exciting phase of fusion research with the construction of ITER**
- **Broader approach activities important in the context of the *fast track* approach**
- **To help Europe deliver a new organisation in the form of a Joint Undertaking is needed**
- **Preparations are underway and *Fusion for Energy* should be starting in one year**
- **Many exciting opportunities for skilled staff who want to keep Europe at the forefront**



Thank you for your attention!

Questions?

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