Global Governance: The case of ITER

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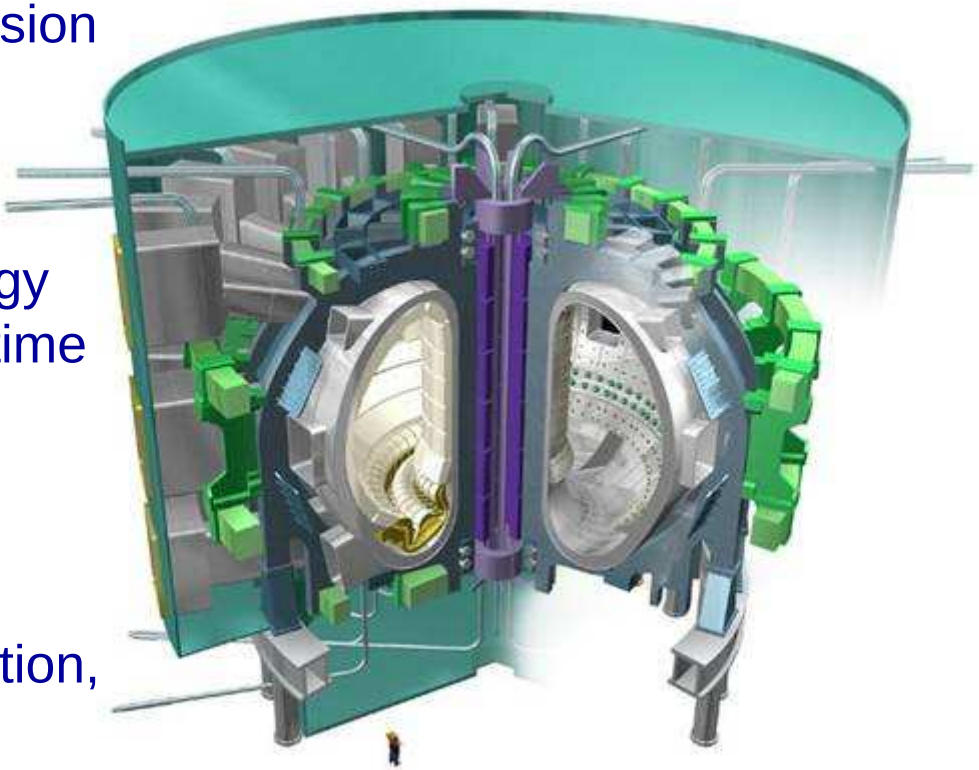
ITER Deputy Director-General

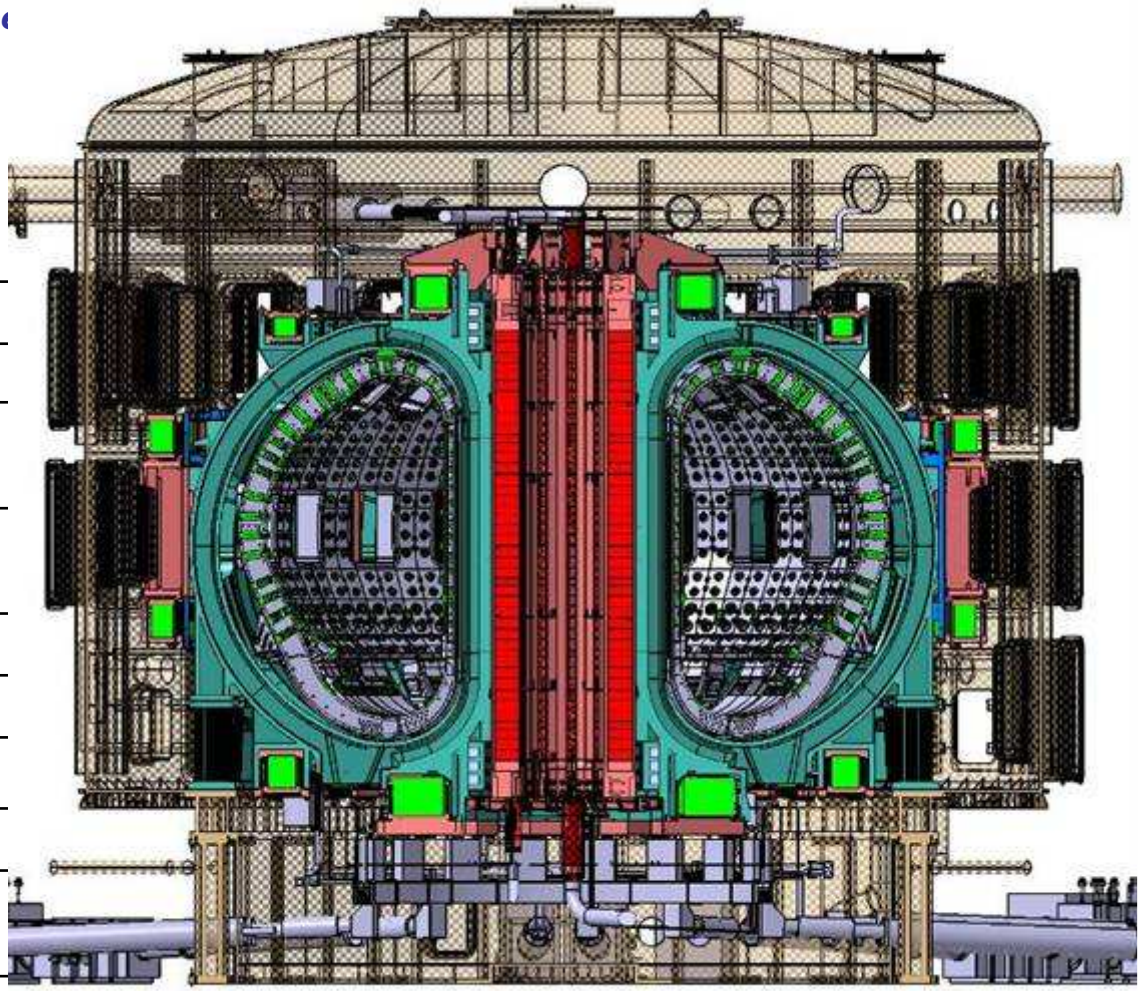
ITER – Key facts

- Objective: to demonstrate the scientific and technological feasibility of fusion power
- Designed to produce 500 MW of fusion power (ten times the energy input) for an extended period of time
- 10 years construction, 20 years operation
- Cost: 5 billion Euros for construction, and 5 billion for operation and decommissioning



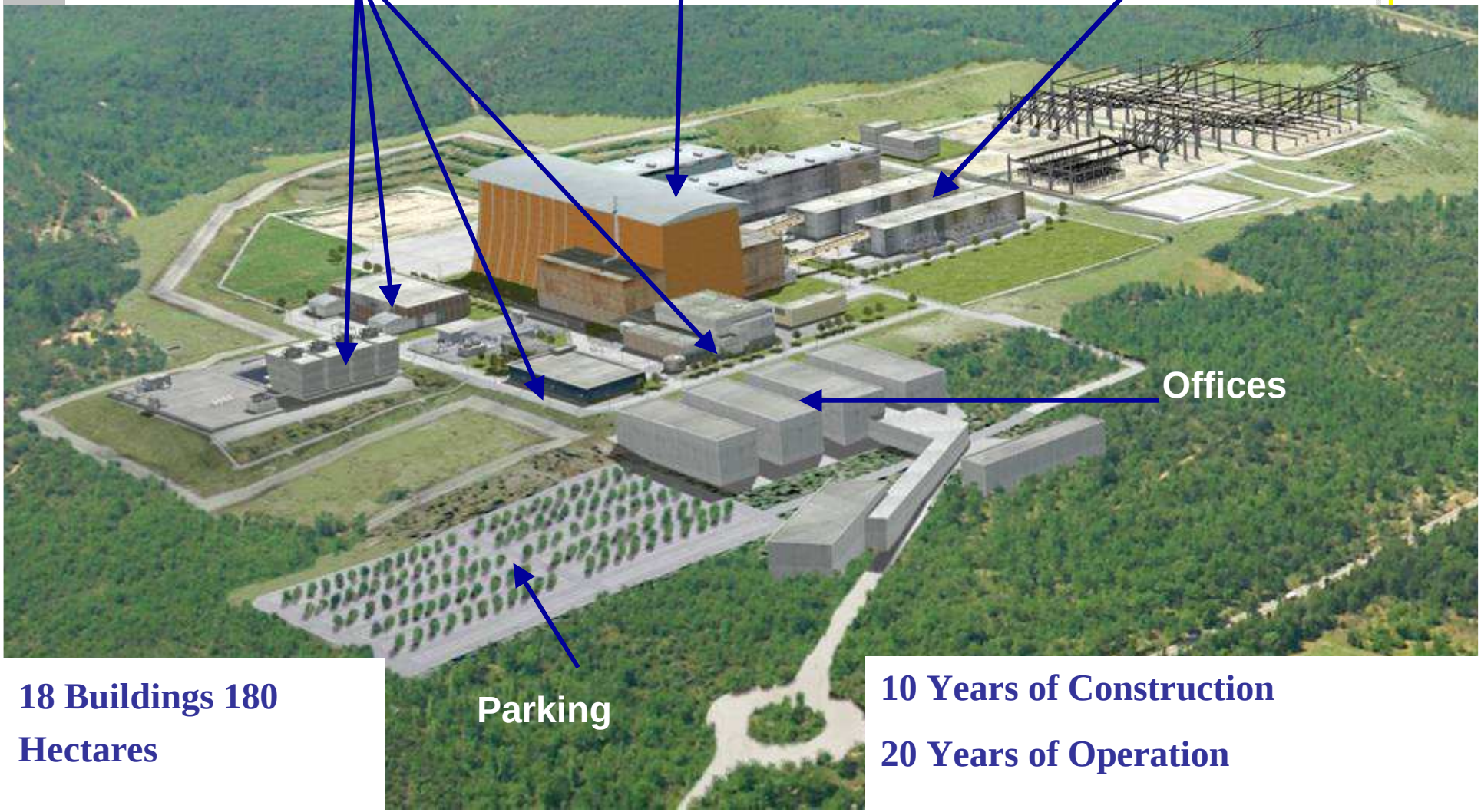
The core of ITER

Total fusion power	500 MW
Additional heating power	50 MW
Q - fusion power/ additional heating power	≥ 10
Average 14MeV neutron wall loading	≥ 0.5 MW/m^2
Plasma inductive burn time	300-500 s *
Plasma major radius (R)	6.2 m
Plasma minor radius (a)	2.0 m
Plasma current (I_p)	15 MA
Toroidal field at 6.2 m radius (B_T)	5.3 T



Machine mass: 23350 t (cryostat + VV + magnets)

- shielding, divertor and manifolds: 7945 t + 1060 port plugs
- magnet systems: 10150 t; cryostat: 820 t



18 Buildings 180 Hectares

10 Years of Construction

20 Years of Operation

"*For the benefit of mankind* "

The idea for ITER originated from the Geneva Superpower Summit in 1985 where Presidents Gorbachev and Reagan proposed international effort to develop fusion energy…

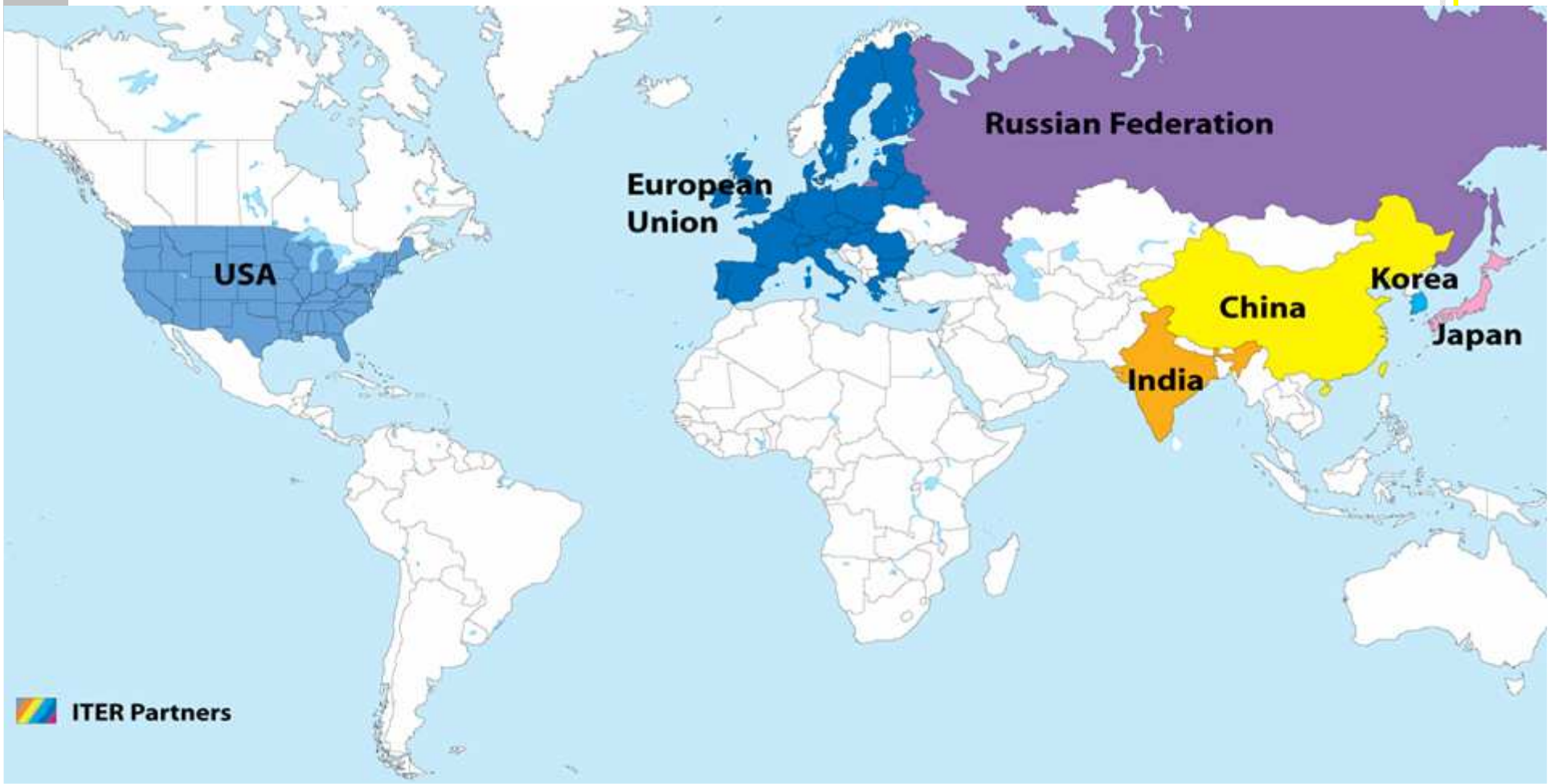
…"*as an inexhaustible source of energy for the benefit of mankind*".

November 21, 2006 in Paris :

China, Europe, India, Japan, Korea, Russian Federation and the United States of America sign the ITER Agreement.

ITER - a truly global project…

The seven parties involved in the ITER construction represent more than 50 % of the world's population



ITER Organization Structure

Revised on 7 November 2008

Management Advisory Committee

ITER Council

Science and Technology Advisory Committee

Financial Audit Board

DDG Carlos Alejaldre

Dept. for Safety & Security
Safety Control
• Quality Assurance

Kaname Ikeda

Director-General

Senior Advisor (P. Amenc-Antoni)

Norbert Holtkamp

Principal DDG

Senior Advisors (G. Janeschitz & J. Farineau)

Domestic Agencies

- China
- EU
- India
- Japan
- Korea
- Russia
- USA

Office of the Director-General (H. Matsumoto)

ITER Council Secretariat (S. Ishizaka)

Legal Office (P. Tuinder)

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- Plant Engineering
- Fuel Cycle Engineering
- Electrical Engineering
- Design Office

DDG Dhiraj Bora

Dept. for CODAC & IT, Heating & CD, Diagnostics
- CODAC and IT
- Heating and Current Drive
- Diagnostics

Civil Construction and Site Support Office (J. Sovka)
- Building System
- Site Layout
- Nuclear Buildings
- Steel Frame Buildings

International Decision Making

1st ITER Council
November 27-28, 2007

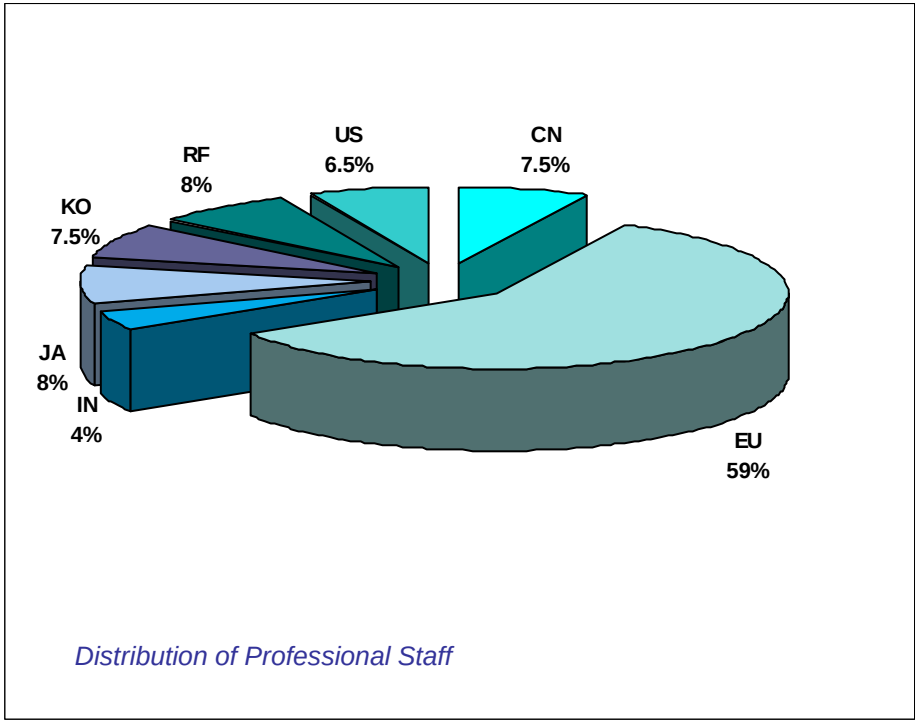
2nd ITER Council
June 17-18, 2008

- Scientific R&D projects on the ITER scale means sharing the cost and risk globally - learning to make decisions on an international scale

ITER Staff Status

(As at 30 September, 2008)

- As of 30 Sept 2008, the IO has a total of 276 staff, including 207 professionals & 69 support staff
- A total of 24 nationalities
- By early 2009, total staff will be around 340
- The ITER Organization is still in the middle of recruitment and buidling-up



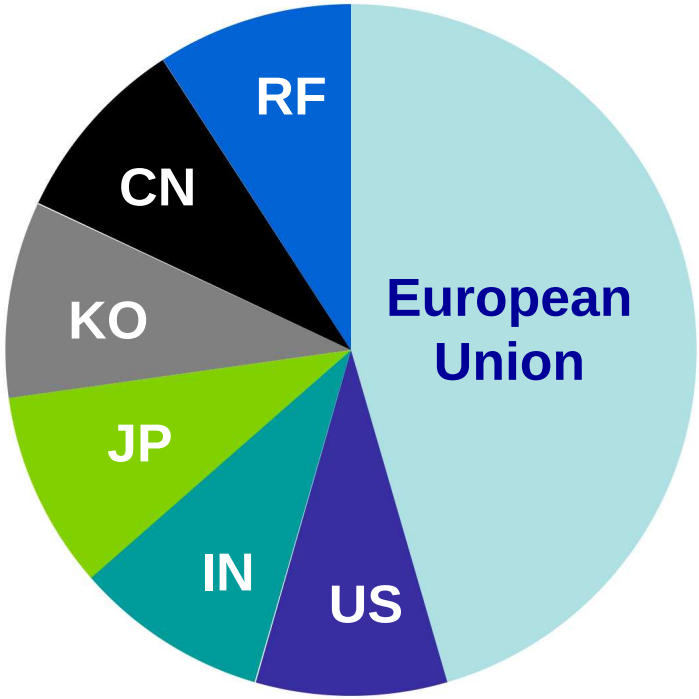
Distribution of Professional Staff

Construction Sharing

How the overall costs are shared:

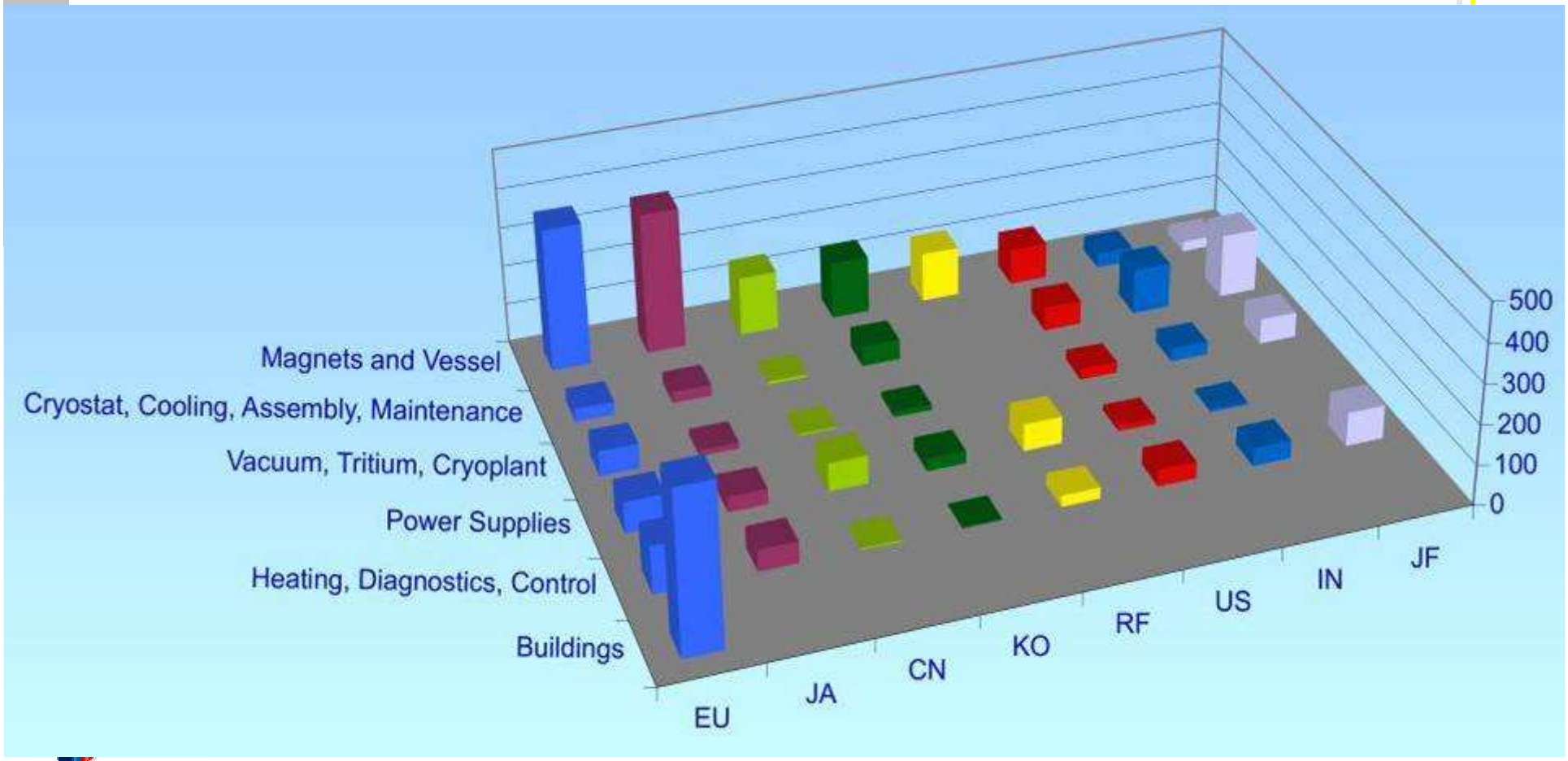
EU 5/11, other six parties 1/11 each. Overall contingency of 10% of total. Total amount: 3577 kIUA (5.365 Mil € / 2008)

Divertor cassette during R&D phase



Procurement Sharing

A unique feature of ITER is that almost all of the machine will be constructed through *in kind* procurement from the Parties



Procurement Sharing

Example for the Procurement Sharing Agreements; Total 92

PACKAGE			kIUA	ALLOCATION	REMARKS
1.1 Magnet	Toroidal Field Magnet Windings	1A	85.2	EU=100%	1A for 10 TF (including 1 prototype) and 1B for 9 TF (including 2.5 kIUA for fabrication verification)
		1B	82.3	JA=100%	
	Toroidal Field Magnet Structures	2A	51.4	EU=10%, JA=90%	Fabrication of whole structures by JA and Pre-compression ring (0.6 kIUA) by EU. Final assembly of 10 TF coil cases by EU (10%)
		2B	47.7	JA=100%	
	Magnet Supports	2C	22.85	CN=100%	
	Poloidal Field Magnet 1 & 6	3A	13.6	EU=50%, RF=50%	PF1 by RF and PF6 by EU
	Poloidal Field Magnet 2 to 5	3B	33.6	EU=100%	
	Correction Coils	3C	2.6	CN=100%	
	Central Solenoid Magnet	4A+4 B	39.6	US=100%	
	Feeders	5A	26.15	CN=100%	
	Feeders Sensors	5B	18.05	FUND=100%	
	Toroidal Field Magnet Conductors	6A	215	EU=20%, JA=25%, RF=20%, CN=7%, KO=20%, US=8%	See Note-1
	Central Solenoid Magnet Conductors	6B	90	JA=100%	

Distributed Agencies

- The ITER Organization and the ITER Domestic Agencies are building their capabilities

Roles and Responsibilities for Construction

ITER Organization	Seven Members (Domestic Agencies, DA)
– Planning / Design – Integration / QA / Safety / Licensing / Schedule – Installation – Testing + Commissioning – Operation	– Detailing / Designing – Procuring / Manufacturing – Delivering – Supporting installation – Conformance

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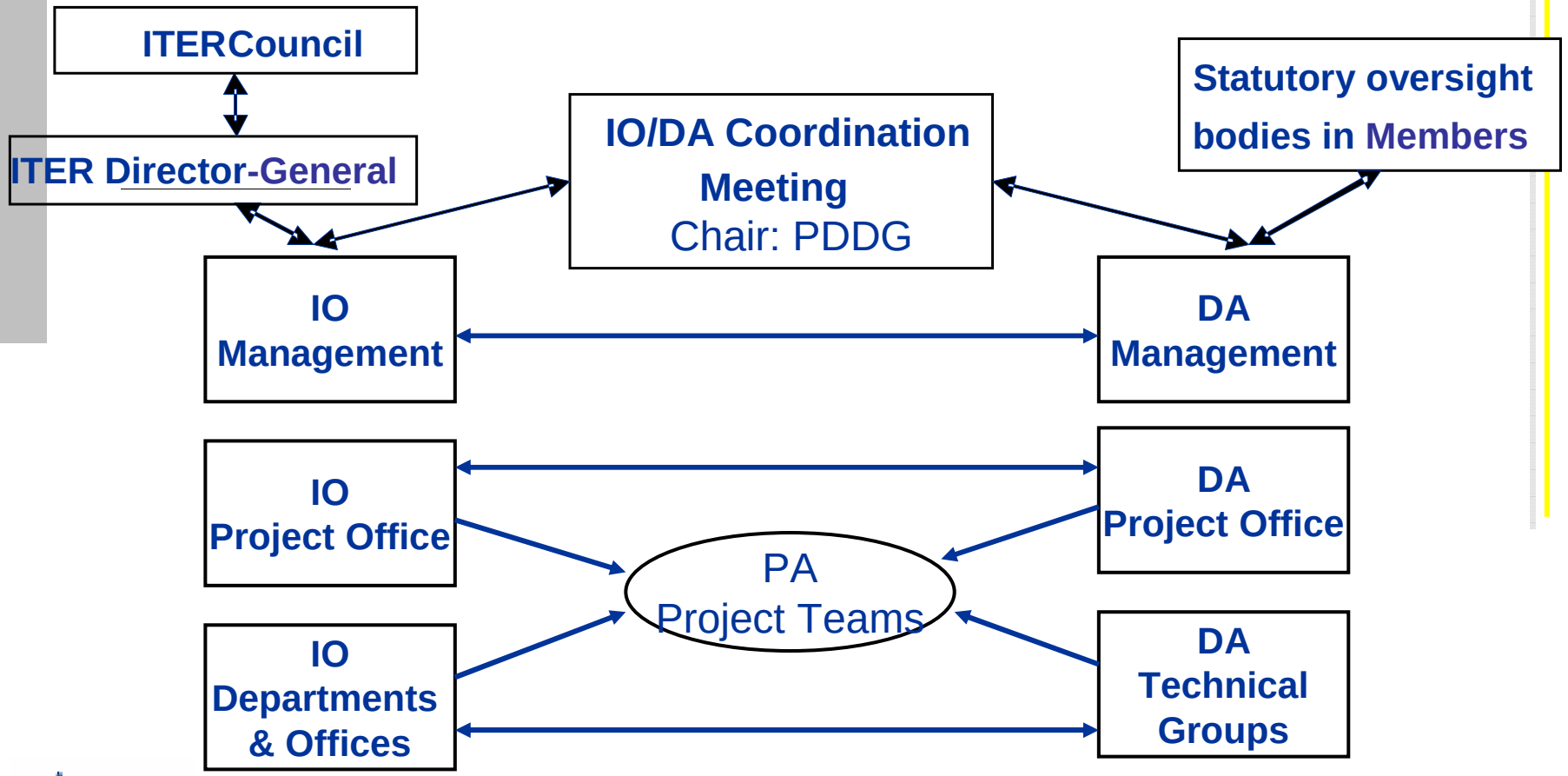
Communication between IO and DAs

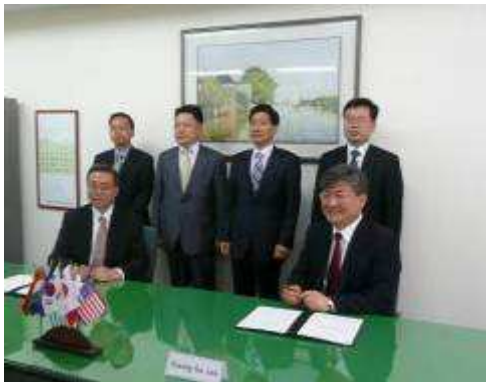


Signature of ITER TF Conductor PA

JA-DA (28 Nov. 07;
Credit Share: 25%)

EU-DA (18 Dec. 07;
Credit Share: 20%)

RF-DA (12 Feb. 08;
Credit Share: 20%)



KO-DA (7 May 08;
Credit Share: 20%)

CN-DA (16 Jun. 08;
Credit Share: 7.5%)

Main platform – to the East