

# TCS INTRODUCTION TO CERN

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13 Sep 2021

# TATA Group is a Global Technology Leader

- 153 | Years of heritage
- \$106 Bn | Group revenue
- 750.000+ | Employees across the globe
- 30 | Companies in 10 business sectors
- 66% | Profits committed to Philanthropic Trust

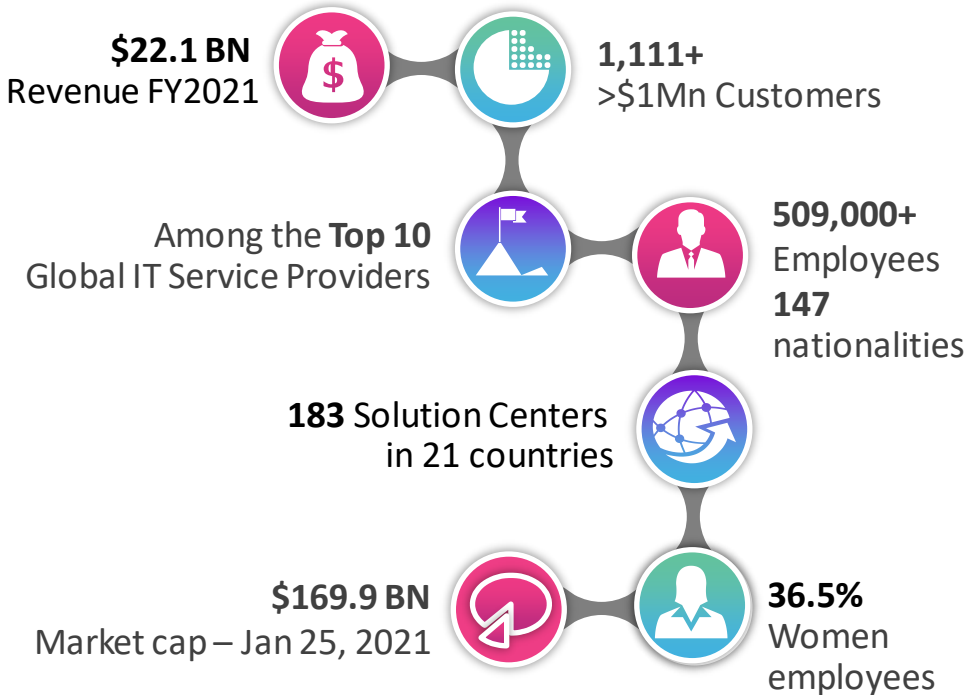
Founder, Jamsetji Tata



*In a free enterprise, the community is not just another stakeholder in business, but is in fact the very purpose of its existence.*



**We Are :** A global IT services, consulting and business solutions leader partnering with the world's leading businesses in their transformational journeys



Ranked amongst the **Top 3 brands** in IT Services globally by brand value and the **fastest growing brand of the decade**

# Through Three Horizons to Purpose-led Growth

Purpose defines organizations, so we have placed it at the core of our business growth strategy.



TRANSFORM & GROW AROUND PURPOSE-LED ECOSYSTEMS



INNOVATE BUSINESS MODELS

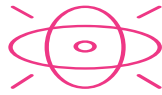


BUILD DIGITAL CORE

## The TCS commitment



In it for good



Bring everything

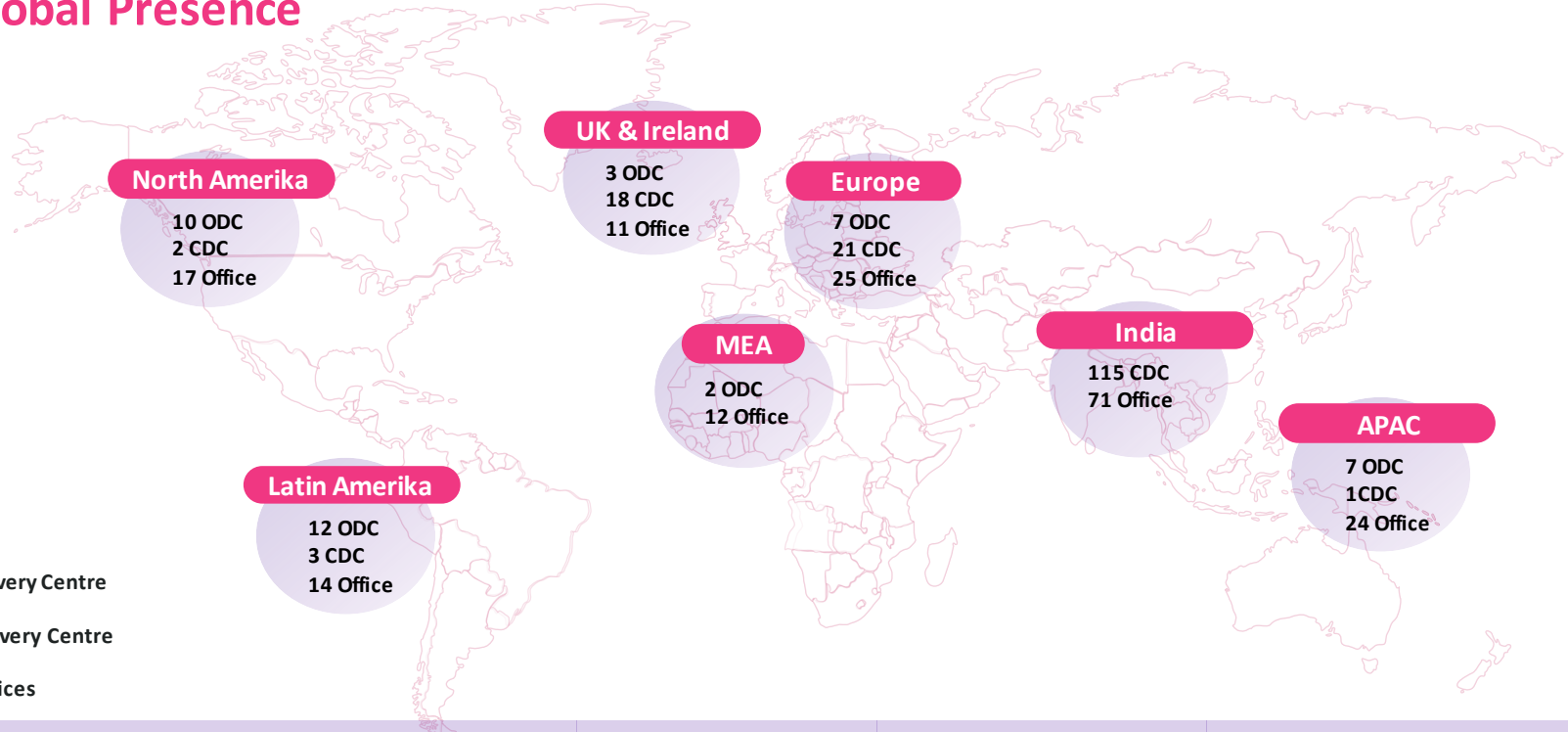


Know-how



Master the journey

# TCS Global Presence



ODC: Offshore Delivery Centre

CDC: Customer Delivery Centre

Office: Regional Offices

## North Americas

**Associates:** 35.100+

**Clients:** 450+

## Latin America

**Associates:** 17.800+

**Clients:** 200+

**ODC:** Argentina, Mexico, Brazil, Uruguay and Chile

## EMEA

**Associates:** 27.700+

**Clients:** 390+

**ODC:** England, Israel, Hungary, France, Spain and

## India (APAC)

**Associates:** 360.500+

**Clients:** 400+

## APAC

**Associates:** 16.100+

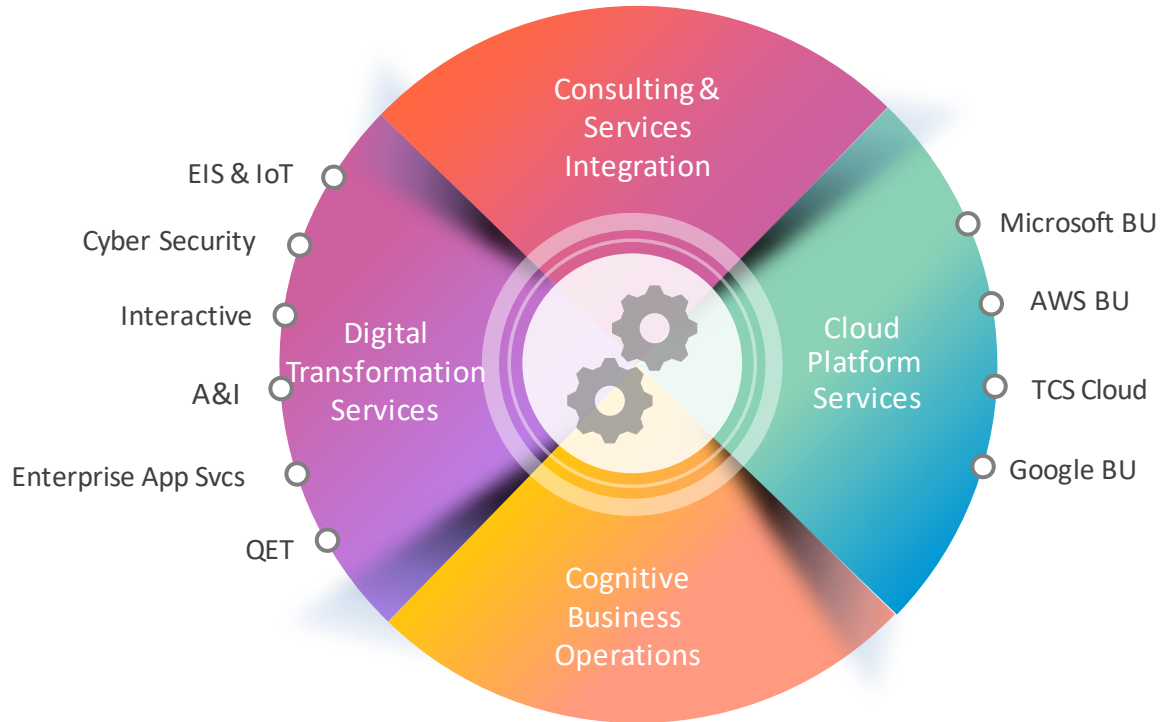
**Clients:** 400+

**ODC:** Philippines, China and Singapore

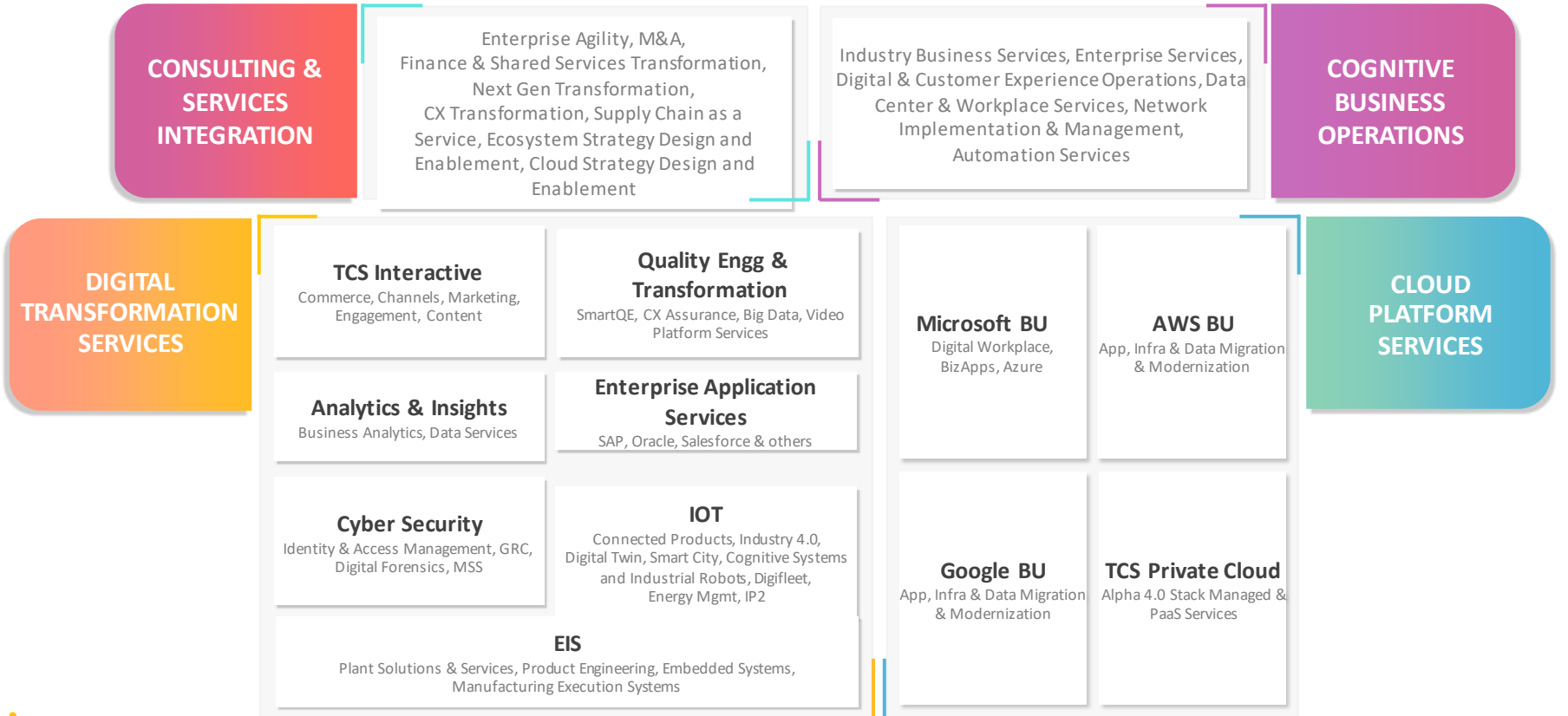
# ....and Embraces the Future of Work with Secure Borderless Workspaces



# TCS Services Portfolio

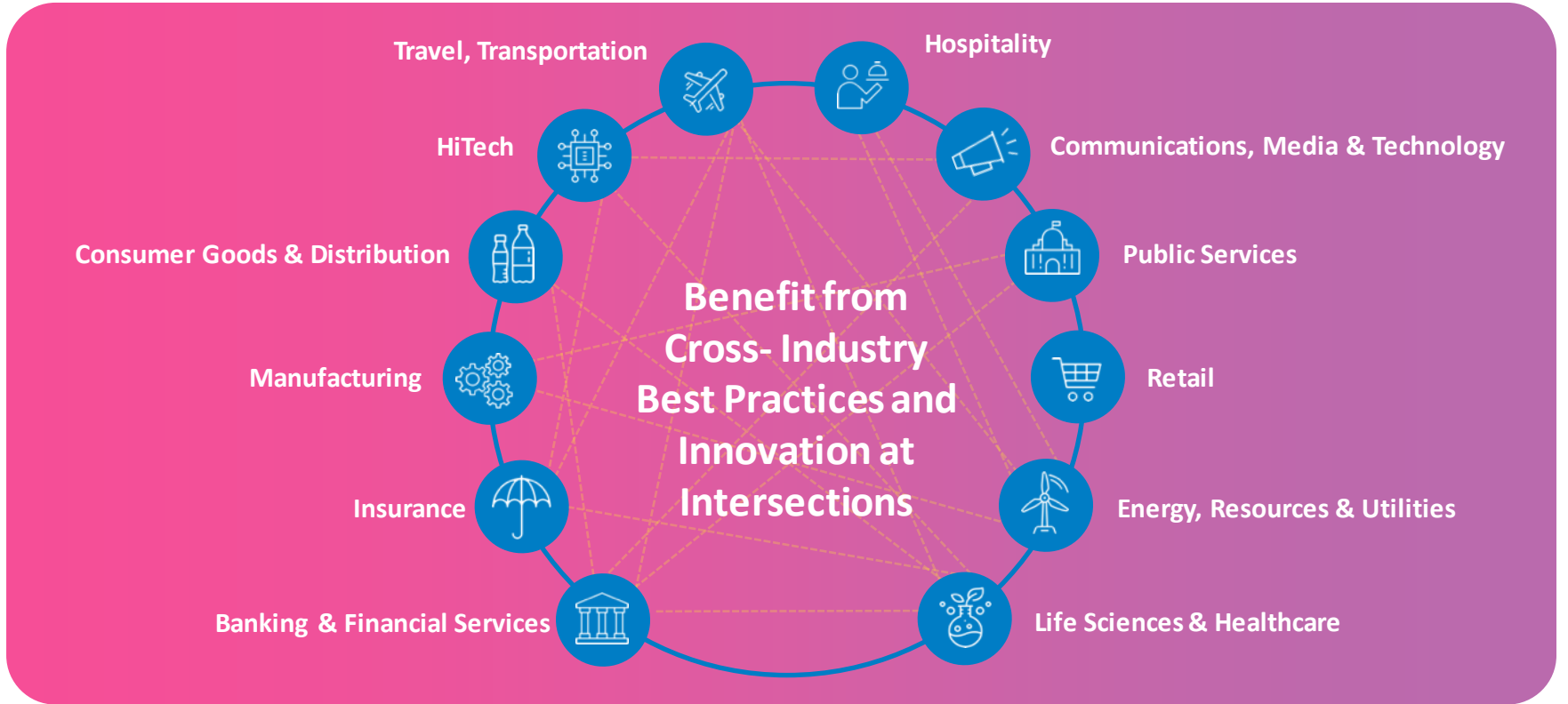


# TCS Services Portfolio





# Industries we serve



# TCS in World' Mega Science Project



Department of Atomic Energy



National Centre for Radio Astrophysics (NCRA)



Institute for Plasma Research (IPR)



Bhabha Atomic Research Center (BARC)



Square Kilometer Array (SKA)



International Thermonuclear Experimental Reactor (ITER)



European Organization for Nuclear Research (CERN)

Autonomous Institutions

Projects

Project Description

TCS Engagements

Square Kilometer Array (SKA) is a project will combine the signals received from thousands of small antennas spread over a distance of several thousand kilometers to simulate a single giant radio. This would make it the largest telescope in the world.

- Project Management
- Requirements, Architecture and Design of control system for SKA.
- Prototyping and Technology finalization
- Heading towards construction

International Thermonuclear Experimental Reactor (ITER) is an experimental fusion reactor facility under construction in Cadarache, France to prove the feasibility of nuclear fusion for future source of energy.

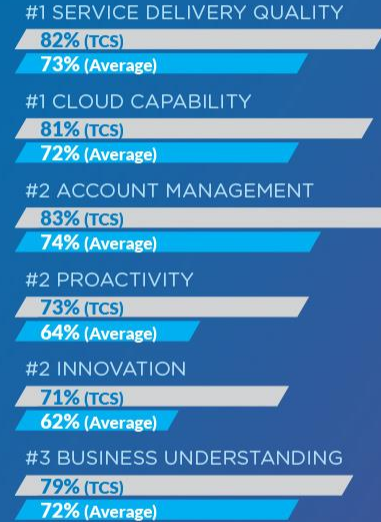
TCS along with other players like L&T, Kirloskar, INOX and ECIL have bagged projects worth Rs. 3,500 Crores. The nature of TCS' engagement with ITER is not available in public domain.

European Organization for Nuclear Research operates the largest particle physics laboratory in the world. It has a large computing facility, used primarily to store and analyze data from experiments, as well as simulate events. CERN is the birthplace of World Wide Web.

Looking forward to work with CERN

# Europe Ranks **TCS #1** in **CUSTOMER SATISFACTION** **EIGHTH YEAR** in a row

European IT customer satisfaction survey by whitelane research



**1700+**  
CXOs Polled



across  
**13**  
European  
Countries

Combined  
annual Value  
of Contracts  
over

**€40**  
Billion



**4050+**  
IT Contracts

## TCS' RANK ACROSS VARIOUS COUNTRIES\*



CUSTOMER SATISFACTION

**TCS**  
**82%**

Average  
**72%**

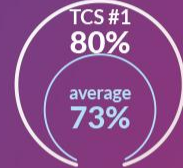
tcs

**TATA**  
CONSULTANCY  
SERVICES

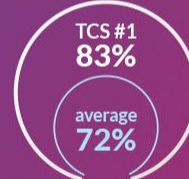
**#1** IN CUSTOMER  
SATISFACTION  
2020/21 EUROPE  
Whitelane Research

## Satisfaction by IT Domain

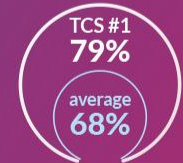
1. APPLICATION DEVELOPMENT  
MAINTENANCE AND TESTING



2. INFRASTRUCTURE SERVICES



3. END USER SERVICES



“TCS has showcased their capabilities, flexibility and agility in supporting their clients in their digital transformation efforts regardless of the situation. They have more than proved to be the reliable, innovative and trusted digital partner customers are looking for.”

JEF LOOS, HEAD OF RESEARCH, WHITELANE RESEARCH

\*BASED ON STUDIES CONDUCTED BY WHITELANE RESEARCH, PA CONSULTING, QUINT WELLINGTON REDWOOD, NAVISCO AND VLERICK BUSINESS SCHOOL IN 2020.

# Why our customers believe in us...



Execution at Scale



Investments



Innovation and  
platforms



Ecosystem



Engineering and  
Domain

# APPENDIX

# TCS Participation in ITER

Control System Design and Integration

CODAC System Development

PLM System Design

I&C Engineering

System RAMI Analysis

Project Management Support

Investment Protection System Design

Engineering and CAD Support

# TCS Engineering Program for ITER

## Supervisory System Design for EPICS



*CODAC is EPICS based supervisory system which coordinates all ITER Plant Systems, performs operation states management*

- TCS developed SDD Toolkit - Core tool of CODAC, that provides functionality of I&C system configurations, data archiving, alarm management to achieve integrated plant system operation

## Control System Design



*3 tier system includes conventional, interlock and nuclear safety systems*

- Plant system I&C requirement analysis, Definition of functions and interfaces
- Adopted top-down and bottom-up combination approach to develop complete I&C architecture for complex nuclear fusion program
- Development of tools to facilitate I&C design

## Control System Implementation



- Development of I&C prototype projects to validate ITER standards, system and gui deline demonstration.
- Development of end to end project for Cooling water system
- Plant control system development, implementation and integration.

## Communication and Health Monitoring



- Common diagnostics platform for Siemens S7 300/ 400 PLCs and remote I/Os
- Development of communication interfaces for EPICS, event based interfaces, redundant PLC interface
- Development of health monitoring system for I&C cubicles

## Control System Analysis

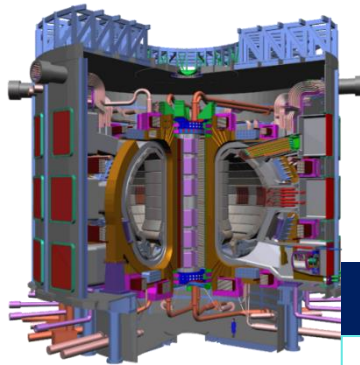


- Performance analysis I&C architecture ITER machine protection functions
- Validation & assessment of methodology for the interlock system implementation
- Performance analysis of Siemens S7-1500 controllers for ITER requirements

## Mechanical Engineering Design



- Assembly management of Neutral Beam Injection System
- Beryllium confinement solution during NB assembly & implementation of manufacturing tolerance on duct line aperture
- Defining interfaces for installation & formalizing construction process for neutral beam system
- Reliability analysis & identifying risk reducing action on basis of FMECA



# TCS Engagement in SKA

An **International** program that aims to set up the world's **largest** and **most sensitive** radio telescope.



- TCS is involved since Concept of Design (CoD) phase (year 2012)
- An Industry partner of NCRA in SKA India consortium (Since 2013)
- Developed a production version of control system for NCRA's radio Telescope- Giant Radio Metrowave Radio Telescope (GMRT)
- GMRT is recognized as pathfinder radio telescope for SKA- Explores SKA related science and Technologies
- Solution architecture and design
- Technology and architecture prototype



# SKA Telescope Manager

Mid Frequency Aperture Array (MFAA)

Central Signal Processor (CSP)

Dish

Telescope Manager (TM)

Science Data Processor (SDP)

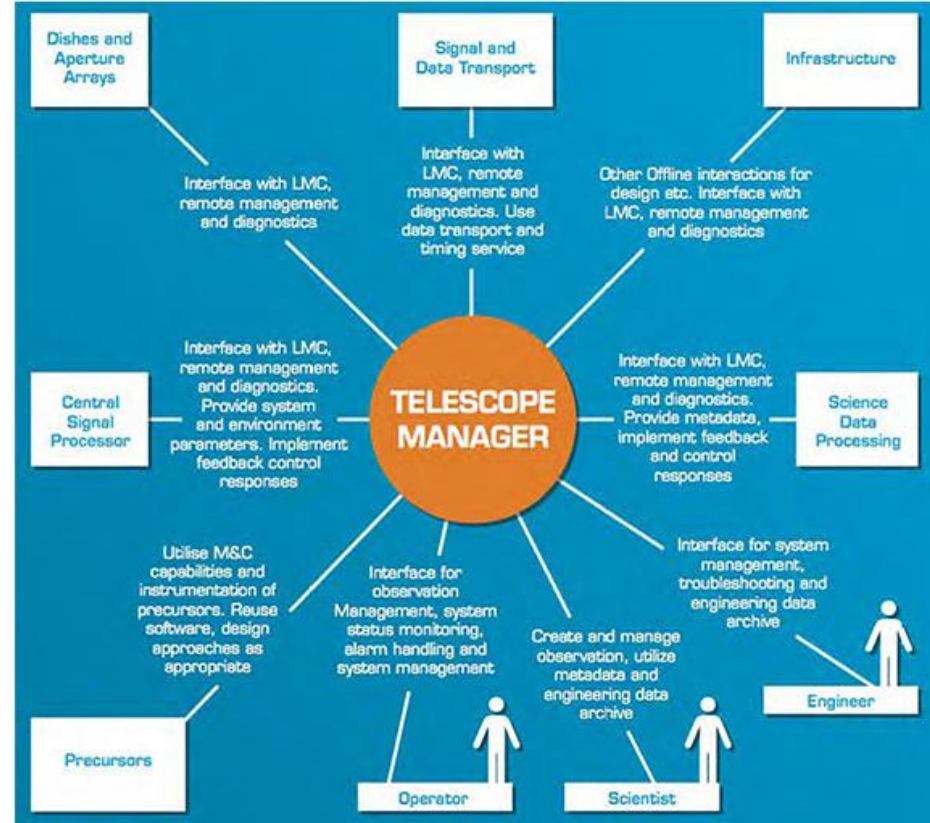
Assembly, Integration and Verification (AIV)

Infra- (Aus&SA)

Signal and Data Transport (SADT)

Low Frequency Aperture Array (LFAA)

Wide Signal Pixel Feeds (WSPF)



# We Were Also Recognized for Highest Brand Value Growth in IT Services in 2020

From 2010 to 2020 the TCS brand has undergone a sixfold increase in its brand value, from US\$ 2.3 billion to US\$ 13.5 billion - the fastest growth by any company in the IT Services industry.

*TCS' Brand Value Increased by Over 10 Percent in a Challenging Year When the Overall Brand Values for the IT Services Industry Dropped 3 Percent*

# Brand Finance®

*Tata Consultancy Services is Among the Top 3 IT Services Brands in the Brand Finance 2021 Rankings; its Brand Value Grew by \$1.4 Billion Over the Prior Year – the Highest Absolute Growth Among the 25 Companies Assessed*