



# INDIGENISATION IN INDIAN NAVY OPORTUNITIES FOR INDUSTRY



**INDIAN NAVY**



# SCOPE OF PRESENTATION

- **GROWTH OF *IN***
- **CLASSIFICATION & PROVISIONING OF ITEMS**
- **SPECIFIC NEEDS OF *IN***
- **INDIAN NAVAL INDIGENISATION PLAN**
- **MAKE & REVENUE PROCEDURES**
- **CONCERNS IN INDIGENISATION**
- **INDIGENISATION SUCCESS STORIES**

# GROWTH OF *IN*

# BUYER TO BUILDER



70s



80s



90s



2000



2010

**TRANSITION FROM BUYER NAVY TO A BUILDER NAVY**

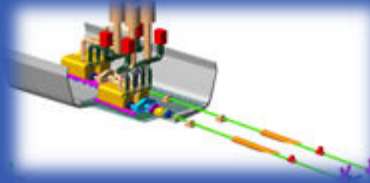
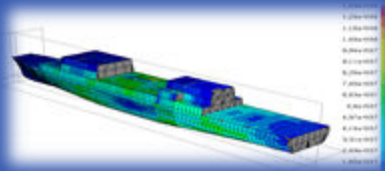
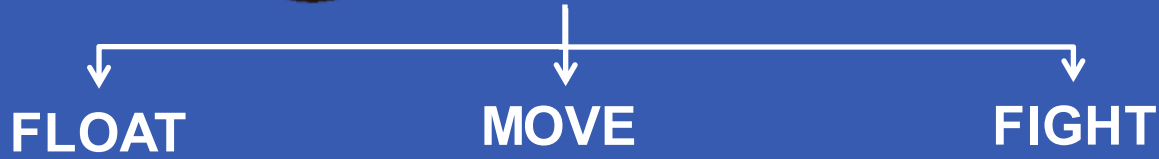
# ONGOING PROGRAMMES

- AIRCRAFT CARRIER
- DESTROYERS
- FRIGATES
- SUBMARINES
- TRAINING SHIPS
- PATROL VESSELS
- FAST INTERCEPTOR CRAFTS



# CLASSIFICATION & PROVISIONING OF ITEMS

# SHIP'S FUNCTIONAL GROUPS

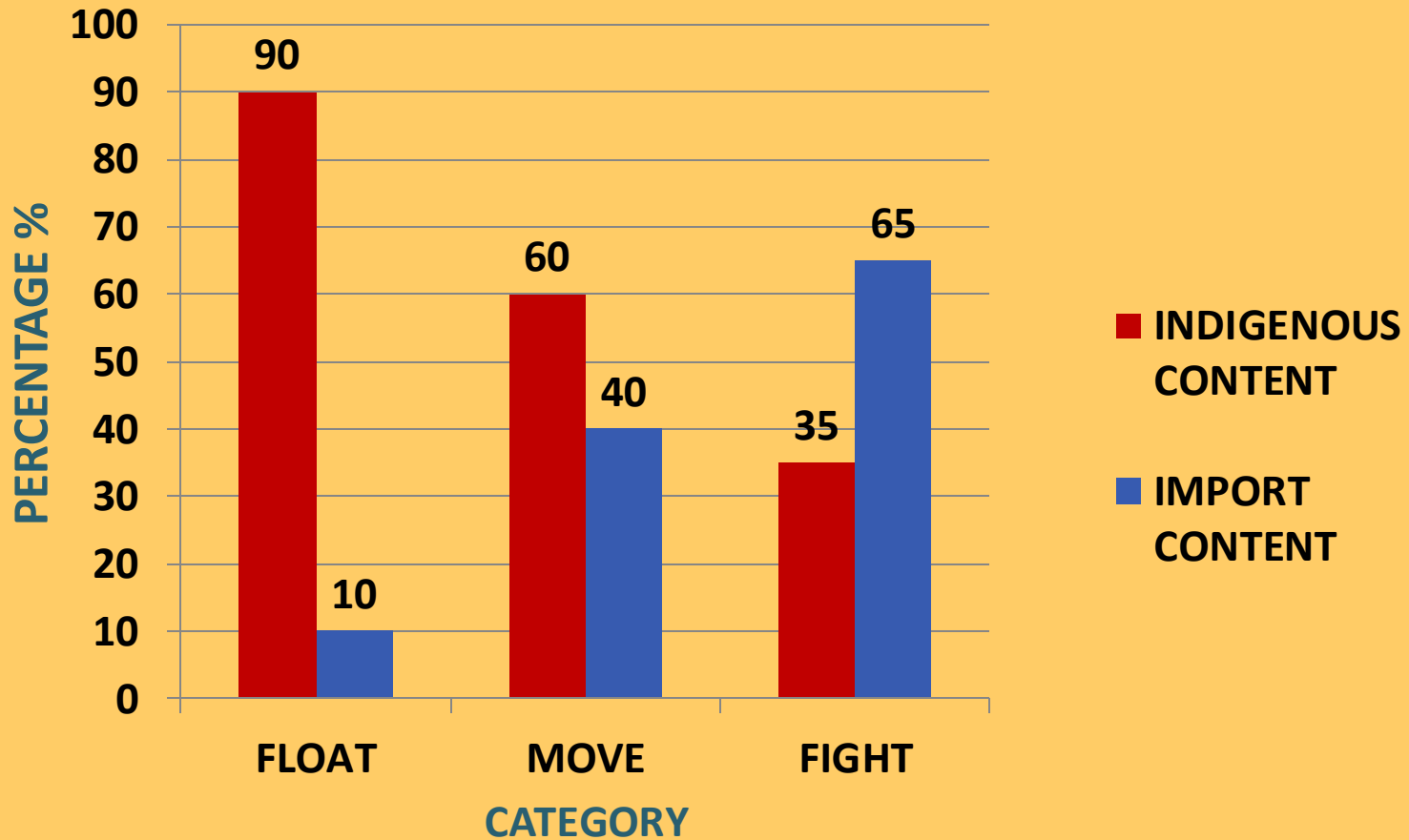


# PROVISIONING OF ITEMS

- **IMPORT**
- **COTS ITEM SUITABLY 'HARDENED'**
- **TOT/ LICENCED PRODUCTION**
- **REVERSE ENGINEERING**
- **AB-INITIO DEVELOPMENT USING FORM/ FIT/ FUNCTION**
- **R&D**



# PRESENT INDIGENOUS CONTENT



**SPECIFIC NEEDS OF *IN***

# WARSHIP VIS-À-VIS MERCHANT SHIP

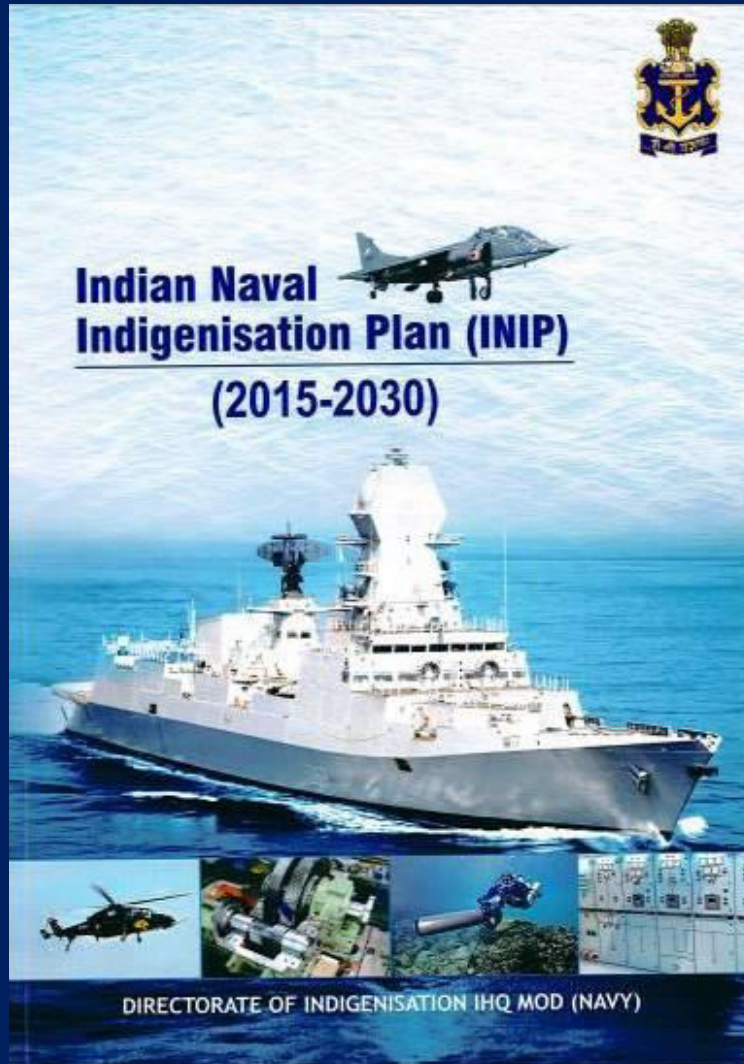


- **DYNAMIC/ CYCLIC LOADING**
- **WITHSTAND HIGH SHOCK/  
VIBRATION/ DAMAGE**
- **SUBMERGED OPERATION**
- **FIRE RESISTANCE**

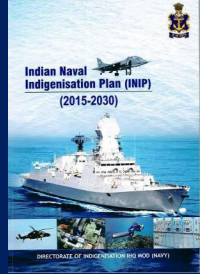
- **LOW TOXICITY OF COATINGS**
- **STEALTH/ LOW SIGNATURES**
- **LOW EMI/ EMC**
- **SPACE CONSTRAINTS**

**MUST BE FACTORED IN DURING DESIGN**

# INDIAN NAVAL INDIGENISATION PLAN

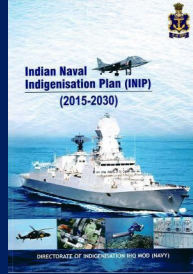


# INIP 2015-2030: PURPOSE



- GUIDELINE DOCUMENT TO ENUNCIATE NEED FOR DEVELOPING ADVANCED SYSTEMS FOR PLATFORMS
- AIMED AT ENABLING INDIGENOUS DEVELOPMENT OF EQUIPMENT AND SYSTEMS IN COMING YEARS
- 1<sup>ST</sup> 15 YEAR INDIGENISATION PLAN PUBLISHED 2008
- INIP (2015-2030) SUPERSEDES EARLIER PLAN
- ADDITION IN CONTENT IS PLANNED BY DEC 2018

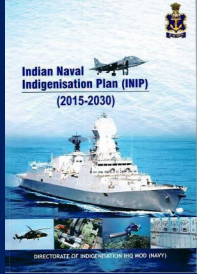
# INIP 2015-2030: OVERVIEW



- INTRODUCTION
  - ✓ ITEMS BEING IMPORTED
  - ✓ CAPABILITY GAPS & PARTNERSHIP POTENTIAL
- INDIGENOUS DEVELOPMENT SO FAR
- CATEGORY-WISE SHIPBOARD EQUIPMENT
- FUTURE TECHNOLOGIES ENVISAGED
- FORECAST REQUIREMENTS

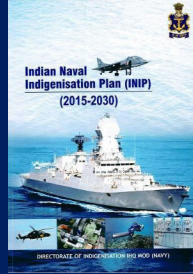
# REQUIREMENTS: FLOAT

- HULL MATERIALS
- HULL PAINTS
- RADAR ABSORPTION PAINTS
- ADVANCED HULL COATINGS



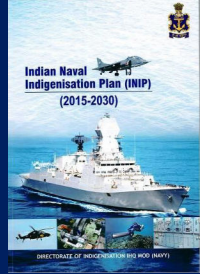
# REQUIREMENTS: MOVE

- ACTIVE MOUNTS
- FUEL CELLS
- LOW ACOUSTIC SIGNATURE MACHINERY
- ELECTRIC DRIVE PROPULSION
- SOLID STATE POWER ELECTRONICS
- IMPROVED BATTERY POWER SYSTEMS
- MAGAZINE FIRE FIGHTING SYSTEM



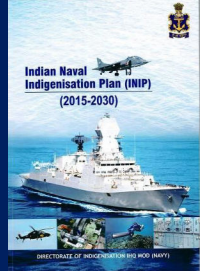


# REQUIREMENTS: FIGHT



- LONG RANGE ELECTRO OPTICAL SENSORS
- FRESNEL LENS BASED OPTICAL LANDING SYSTEM
- CLOSE-IN WEAPON SYSTEM
- INFRA-RED/THERMAL IMAGING SEARCH AND TRACKING SYSTEM
- NEXT GEN NIGHT VISION DEVICES

# FUTURE TECHNOLOGIES



- MATERIAL
- BIO-FUELS
- BIO-TECHNICAL WEAPONS
- IT/ CYBER WARFARE
- UNMANNED WEAPON DELIVERY SYSTEMS

- FUSION TECHNOLOGY
- SPACE TECHNOLOGY
- MISSILE TECHNOLOGY AND HYPERSONICS
- NANO TECHNOLOGY
- ARTIFICIAL INTELLIGENCE

**MAKE SCHEME**



# “MAKE” – DPP 2016

- “**Make**” categorisation of defence procurement aims at
  - Developing long-term Indigenous Defence capabilities
  - Act as vital pillar for realising vision behind “**Make in India**” initiative
  - Promote Self reliance in Defence manufacturing
- Acquisition's under “**Make**” includes
  - Equipment/System/Sub-system/assembly/sub-assembly
  - Major Components or upgrades thereof



# “MAKE” – DPP 2016

- ‘Make’ Categories

- Make – I (Govt Funded)

- 90% Govt Funding
- Released in phased manner based on progress of scheme
- As per terms between MoD and Vendor

- Make – II (Industry Funded)

- Impetus for MSME/Start-ups Sector
- Wider participation of Indian industry
- Involves Prototype Development
  - Focus on Import Substitution

**'Make II' Procedure**  
**Chapter III A of DPP 2016**

Reference : ***'[www.makeinindiadefence.gov.in](http://www.makeinindiadefence.gov.in)***



# “MAKE-II” – PROCESS FLOW

- ✓ Advance Planning & Consultation
- ✓ Approval-in-Principle (AIP)
- ✓ Feasibility Study
- ✓ Prelim. Staff Qualitative Requirements (PSQRs)
- ✓ Preparation of SoC & Formation of PFT
- ✓ Accord of ‘Acceptance of Necessity’ (AON)
- ✓ Issue of Expression of Interest (EoI)
- ✓ EoI Response submission



# “MAKE-II” – PROCESS FLOW

- ✓ EoI Response Evaluation
- ✓ **Award of Project Sanction Order**
- ✓ Design & Development of Prototype
- ✓ **Conversion of PSQRs to SQRs**
- ✓ Solicitation of Commercial Offer
- ✓ **User Trials (Both Vendor & User involved)**
- ✓ Staff Evaluation
- ✓ **Commercial Negotiations**
- ✓ Award of Contract (Buy-Indian: IDDM)





# ADVANCE PLANNING & CONSULTATIONS

## Tasks

- Identify Potential Projects
- Discussions with DRDO, HQIDS, DDP
- AIP : Accorded by Secy (DP)
- Project Brief, Questionnaire uploaded
- (To invite willingness of Industry to participate)

["www.makeinindiadefence.gov.in"](http://www.makeinindiadefence.gov.in)



# FEASIBILITY STUDY

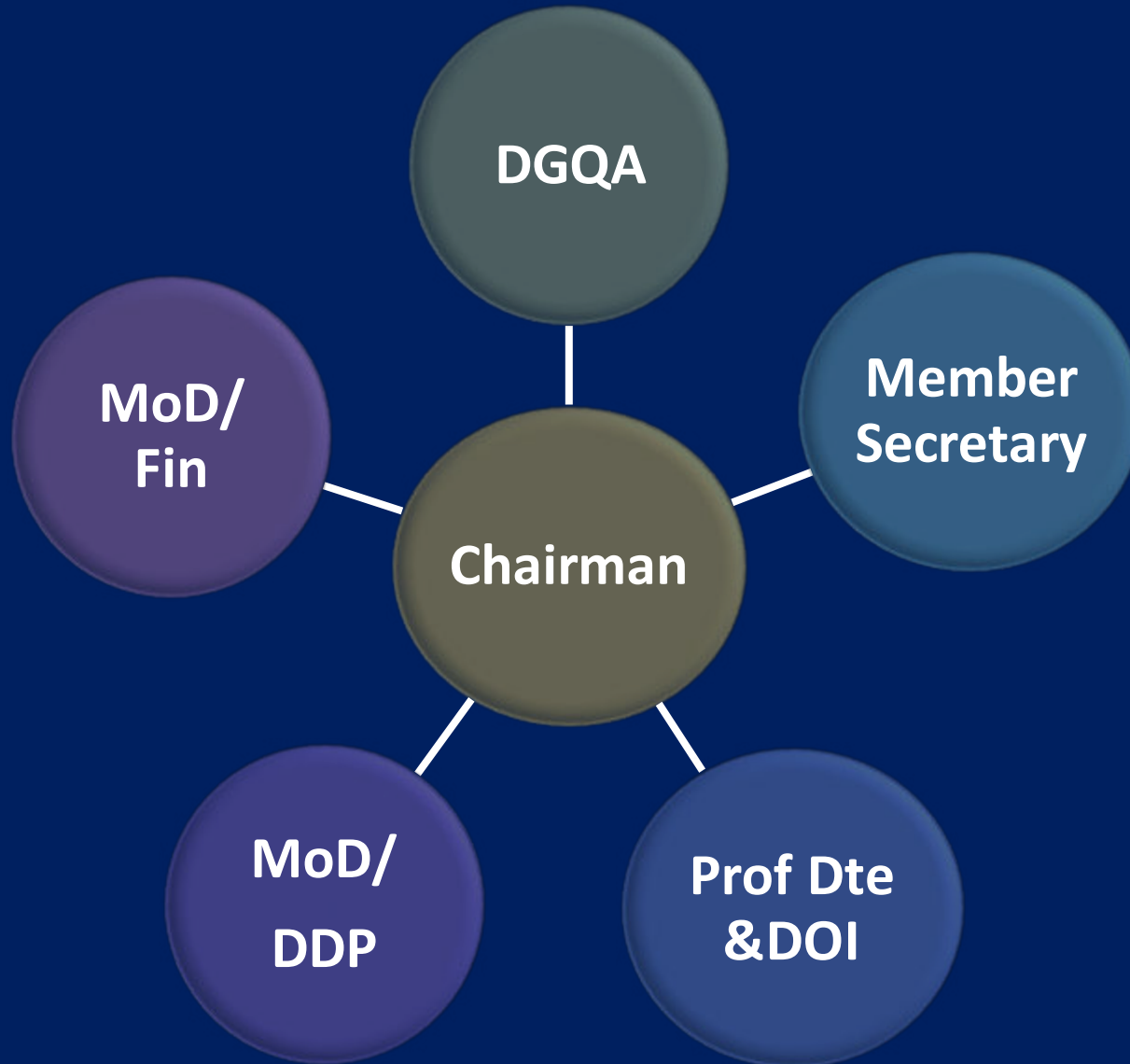
**Stakeholders** : IHQ, DRDO, HQ IDS, DDP, MoD(Fin),  
Industries

## **Deliverables:**

- **Prelim. Assessment of Industry Capability**
- **Duration for Development**
- **Cost**
  - **Prototype Development**
  - **Subsequent procurement**



# CONSTITUTION OF PFT





# PROJECT FACILITATION TEAM (PFT)

## Responsibilities of PFT

- Prepare & Issue EoI (RFP for Tech. Proposal)
- **Evaluation of EoI Response**
- Prepare Project Sanction Order (with 'Nil' Fin. Implication)
- **Interface between IN and Industry during Project Execution**



# EXPRESSION OF INTEREST

- **AON by Competent Authority**
- **EoI : Uploaded in DDP Website**

## EoI

- Scope of Project , Nos. of Prototype
- **Timeframes & Critical Activities**
- List of Trials/ Facilities /Items (By IN)& No. of Such Free Trials
- **Qty for subsequent procurement under 'Buy (Indian - IDDM)'**
- Acceptability of Multiple Technology Solution
- **Evaluation Criteria: Technical, Commercial & Financial**



# EVALUATION OF 'EOI' RESPONSE

- Evaluation of EOI Response against  
**Technical**  
Commercial & Financial Criteria
- **Shortlisted Firms – Development Agencies**
- Sanction for Prototype Development  
*(with Nil Financial Implications)*



# DESIGN & DEVELOPMENT

## Role of PFT

- Interface with Industry
- **Provide Professional Inputs to Dev. Agency**
- Conversion of PSQR to SQR prior to trial
- **Issue of RFP for Commercial Offer (RFP)**
- Review 'User Trial' Readiness



# SOLICITATION OF COMMERCIAL OFFER

- RFP for 'Buy (Indian - IDDM) will be issued to all DA(s)
- **Eqpt. Qty : Specified & Fixed in EoI**
- **Submission of Commercial Offer**  
**-- Prior User Trials**





# USER TRIALS

- PFT will formulate Trial Directives & Trial Team
- **User Trials : Essential Parameters will be Tested**
- **User may Recommend Modifications  
(for Ease of Handling but no Design  
Modification Allowed at this Stage)**



# POST USER TRIALS

- **Staff Evaluation**
- **Commercial Bids of Successful DAs opened**
- **Commercial Negotiation by CNC**
- **Post CNC, case is to be progressed as Buy (Indian-IDDM)**
- **Multiple Technological Solution**
  - **Option for Procurement from L2 vendor in 70:30 Ratio, provided 2<sup>nd</sup> DA Accepts Terms & Conditions, Price of L1**
  - **All other successful DAs will be given Certificate**

# 'MAKE II' Projects AIP Accorded



# MAKE II PROJECTS - AIP ACCORDED

<u>Ser.</u>	<u>Project</u>
1	Deep Sea Side Scan Sonar Towing Winch (DS4TW)
2	Upper Air Sounding System (UASS)
3	Expendable Underwater Target
4	Digital Beamforming Based Satellite TV (DB2 ST)
5	Universal Proximity, Direct Action And Graze Fuses For Gun Ammunition Of 76 To 127mm
6	Single & Three Phase Inverters



# MAKE II PROJECTS - AIP ACCORDED

<u>Ser.</u>	<u>Project</u>
7	Electronic Fuze for Anti-Submarine Rocket RGB 60
8	Detonator 7 Sec Delay for Hand Grenade 36
9	High Speed Low Flying Target
10	Chaff Payload for Kavach Rockets (LRSM, MRSM)

# 'MAKE' PROJECTS EXPLORATORY



# 'MAKE' PROJECTS - EXPLORATORY

<u>Ser.</u>	<u>Project</u>
1	Diesel Engines for Boats
2	Diesel Engines for Propulsion (5-10 MW)
3	Low Noise Water-Jets for Surface Platforms
4	Float Smoke and Flame A/c 3.5 lbs No.2 Mk2
5	Limpet Mine 'MK 414'(7Kg)
6	Limpet Mine 'MK 430' (15 Kg)
7	Signal Flares and associated Consumable Kits for P-75 Submarines

# **IMPORTANT ASPECTS IN DEVELOPMENT**





# IMPORTANT ASPECTS - DEVELOPMENT

- Drawings & Documentation
- Quality Assurance Plans
- Test Plans Including Type Test
- PIL with Part Nos
- Life Cycle Support



# **IMPORTANT ASPECTS - DEVELOPMENT**

## ➤ Quality Assurance Plans

Standard QAPs are available at DGQA website

[www.dgqadefence.gov.in](http://www.dgqadefence.gov.in)



Technical Directorate



DGQA(WP)



Compendium of MQAPs & QAPs

# TEST FACILITIES



# **IMPORTANT ASPECTS - DEVELOPMENT**

- **Various Test Facilities - Govt. Labs including DGQA listed at MoD website**

**[www.makeinindia defence.gov.in](http://www.makeinindia defence.gov.in)**



**Test Facilities**



**Scroll down for PSUs/Services**

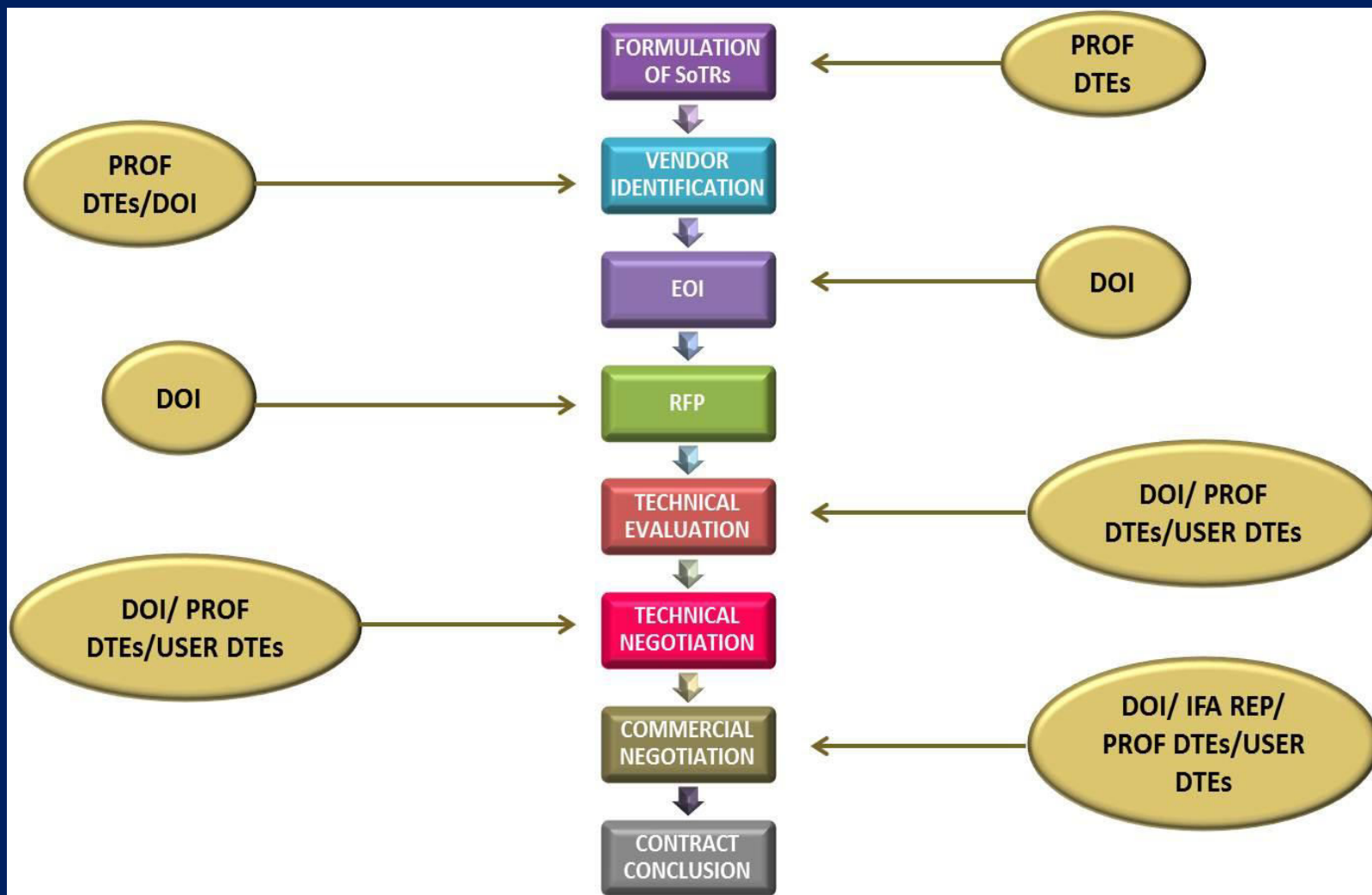


**Procedure and Cost**

# REVENUE CASES

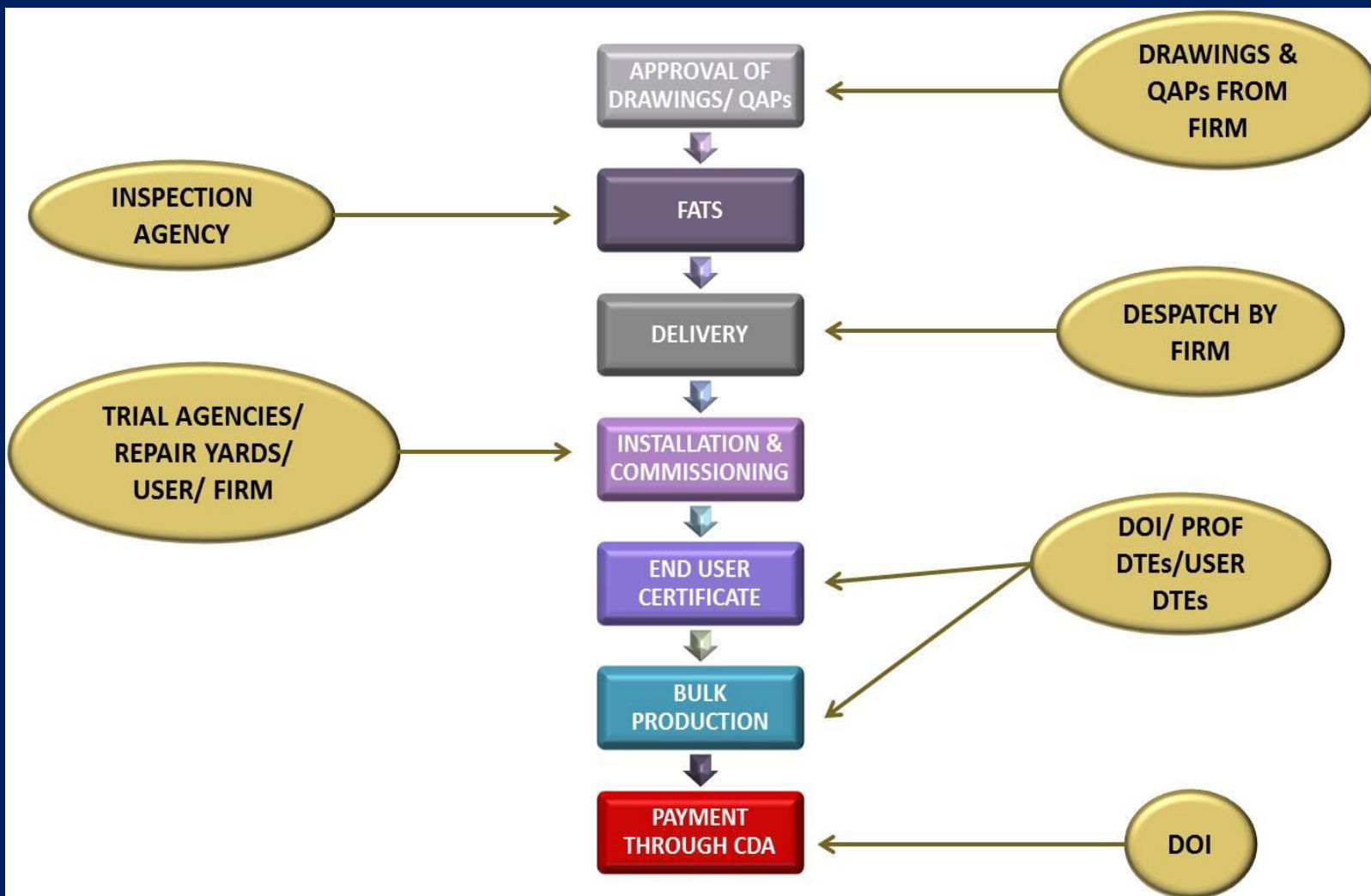
# INDIGENISATION PROCESS AT DOI

## [NEED GENERATION TO CONTRACT CONCLUSION]



# INDIGENISATION PROCESS AT DOI

## [PROJECT EXECUTION]



# CONCERNS IN INDIGENISATION



# CONCERNS - TECHNICAL

- RESEARCH & DEVELOPMENT
- METALLURGY
- DEVIATIONS FROM LAID DOWN SPECS
- DRAWINGS/ QAPs
- PAPER PARTICULARS FOR REPEATABILITY
- QUALITY & RELIABILITY
- HIGH TIME FRAME



# INDIGENISATION SUCCESS STORIES

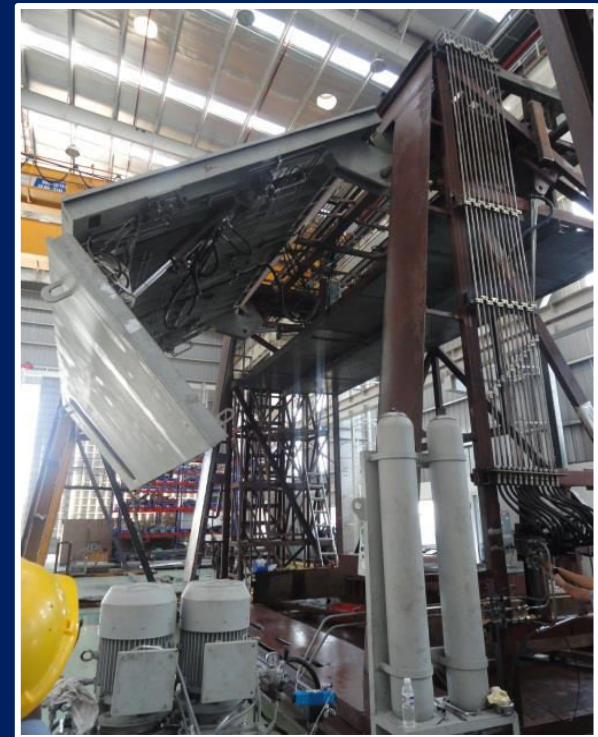
# INDIGENISATION UNDERTAKEN FLOAT

## ■ DRDO/DPSU

- INDIGENOUS SHIP BUILDING INCLUDING DESIGN
- SHIPBUILDING STEEL DMR 249A

## ■ INDUSTRY

- HANGAR DOORS, CAPSTANS
- BOATS, INFLATABLE CRAFTS



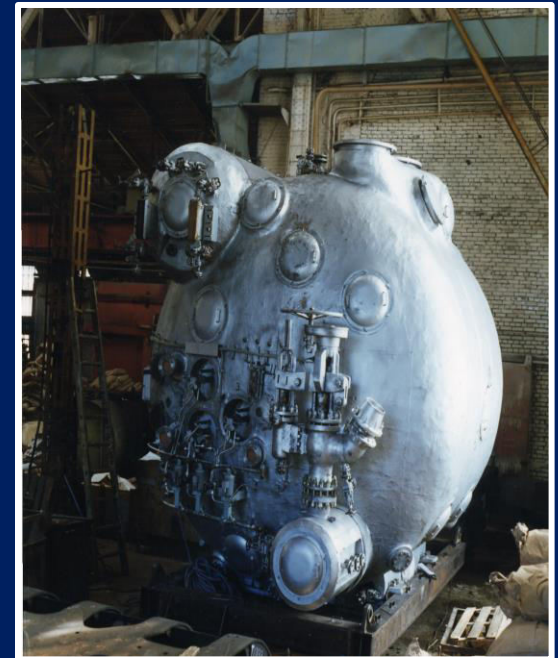
# INDIGENISATION UNDERTAKEN MOVE

- DRDO/DPSU

- BOILER, STEAM TURBINE
- GTG CONTROL SYSTEM

- INDUSTRY

- DIESEL ENGINES, SUBMARINE BATTERIES
- AC & REF PLANTS, AIR COMPRESSOR



# INDIGENISATION IN PROGRESS

## MOVE

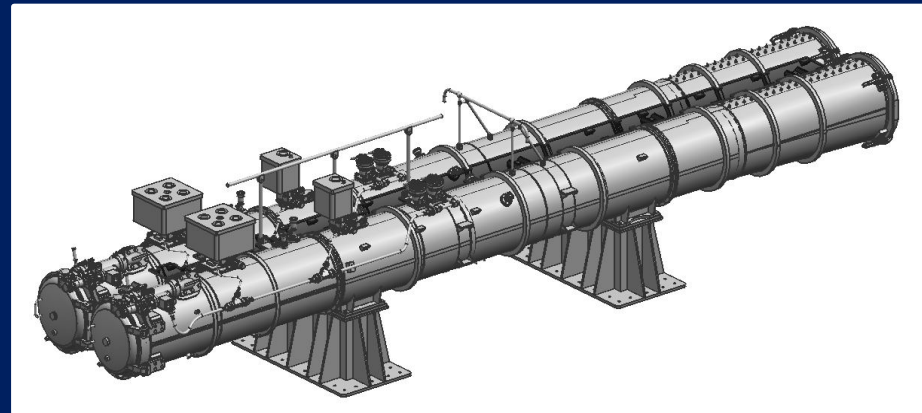
- AIR INDEPENDENT PROPULSION
- INTEGRATED PLATFORM MANAGEMENT SYSTEM



# INDIGENISATION UNDERTAKEN

## FIGHT

- BRAHMOS MISSILE SYSTEM
- ROCKET/TORPEDO LAUNCHERS
- GUNS
- SONARS/RADARS
- ESM/EW SYSTEMS
- COMBAT MANAGEMENT SYSTEM



# INDIGENISATION IN PROGRESS

## FIGHT

- LIGHT WEIGHT MINE
- 3D C/D & E/F SURVEILLANCE RADAR
- SOFTWARE DEFINED RADIO
- ELECTRO OPTICAL INSTRUMENTS
- LONG RANGE SURFACE TO AIR MISSILE
- SHORT RANGE SURFACE TO AIR MISSILE



# INDIGENISATION BY DOI

SNF CLASS STABILISER SYSTEM



G CLASS STABILISER SYSTEM



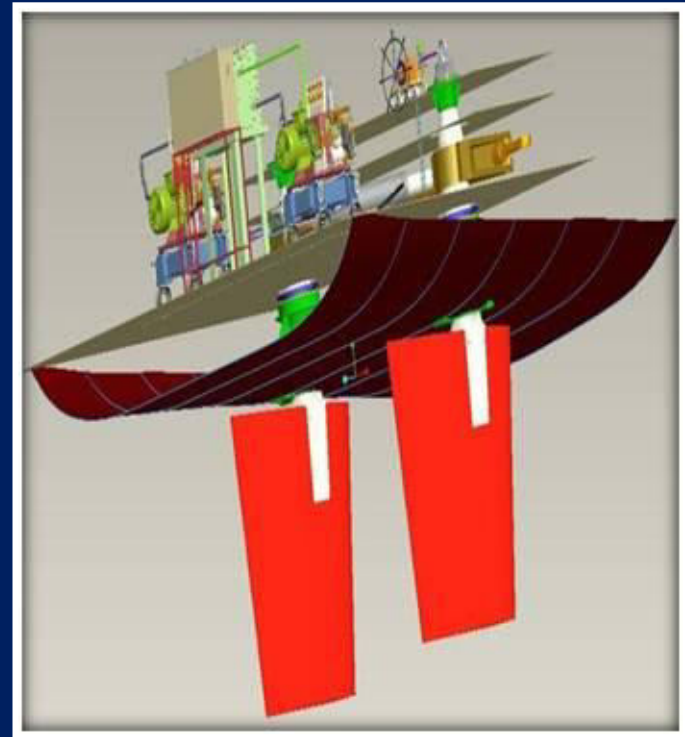


# INDIGENISATION BY DOI

## SNF CLASS GTG CONTROL SYSTEM

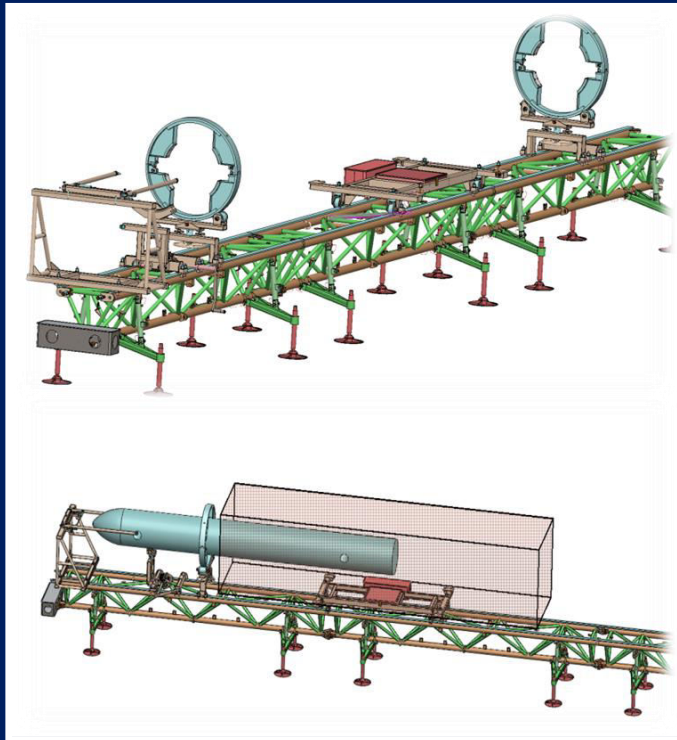


## G CLASS STEERING GEAR SYSTEM



# INDIGENISATION BY DOI

## URAN MISSILE EXTRACTION TROLLEY



## MISSILE LOADER FOR CLUB – N MISSILES



# AVENUES FOR INDIAN INDUSTRY

- HEALTHY ORDER BOOK OF DEFENCE SHIPYARDS
- MID LIFE UPGRADE
- REPLACEMENT OF OBSOLETE EQUIPMENT IN A PHASED MANNER
- INDIGENISATION PLAN 2015-2030
- MAKE PROJECTS
- REVENUE PROJECTS



# OUR CONTACT DETAILS

## AT IHQ MOD (N)

**THE COMMODORE(INDIGENISATION), DIRECTORATE OF INDIGENISATION**  
INTEGRATED HEADQUARTERS OF MINISTRY OF DEFENCE (NAVY)  
5<sup>TH</sup> FLOOR, CHANAKYA BHAWAN  
CHANAKYA PURI, NEW DELHI-110021  
TEL: 011-24108377, FAX: 011-24122689, EMAIL: [doi-navy@nic.in](mailto:doi-navy@nic.in)

## AT WESTERN NAVAL COMMAND

**THE OFFICER-IN-CHARGE, INDIGENISATION UNIT (WEST)**  
C/O FLEET MAIL OFFICE, MUMBAI-400001  
TEL: 022-22751955, FAX: 022-22751954, EMAIL: [wnciuw-navy@nic.in](mailto:wnciuw-navy@nic.in)

## AT EASTERN NAVAL COMMAND

**THE OFFICER-IN-CHARGE, INDIGENISATION UNIT (EAST)**  
NEAR ST JOSEPH HIGH SCHOOL, RK PURAM  
MALKAPURAM POST, VISAKHAPATNAM-530011  
TEL: 0891-2519179, FAX: 0891-2751638, EMAIL: [enciuw-navy@nic.in](mailto:enciuw-navy@nic.in)

**THANK YOU**

