Integrated Simulation Technologies Pvt Ltd

E-Mobility
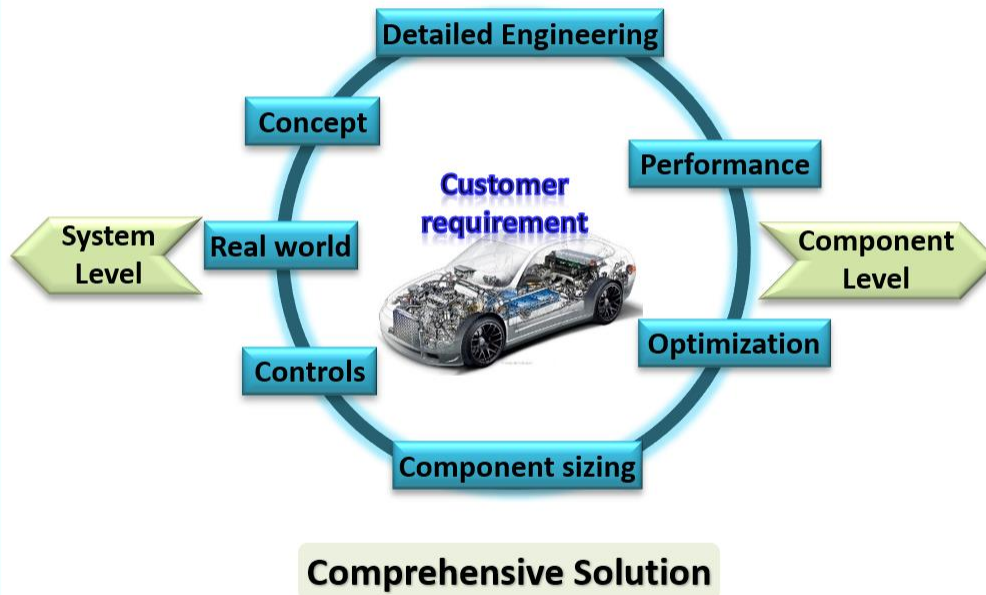
Staffing

Content

- ❑ **About IST**
- ❑ **Detailed capability**
  - ✓ **1D system level simulation**
  - ✓ **3D CFD simulation**
  - ✓ **Co-simulation**
  - ✓ **Design**
  - ✓ **FEA**
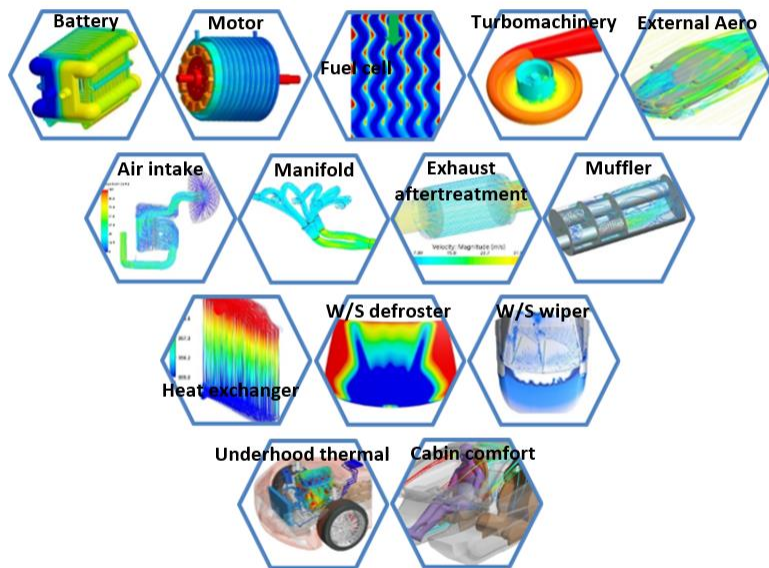- ❑ **Advantage IST**

Consultancy Areas

E-Mobility Development

Resource

Expertise → Zero Lead time → Cost Effective → Partnership

IST's USP

E-Mobility Simulation

Staff Augmentation

Customer Requirement

IST's Consultancy

Left panel:
- Vehicle powertrain
- Vehicle thermal management
- HVAC
- FCEV
- H2 tank filling
- Engine performance
- Vehicle dynamics
- Acoustics
- Microgrid
- Lubrication
- Hydraulics
- Crank & valve train

Center:
- Detailed Engineering
- Concept
- Performance
- System Level
- Real world
- **Customer requirement**
- Component Level
- Controls
- Optimization
- Component sizing

Comprehensive Solution

Right panel:
- Battery
- Motor
- Power electronics
- HEX
- Fan
- Pump
- Turbocharger
- EAT
- Air intake
- Muffler

Expertise ◻ Ownership ◻ Cost Competent ◻ GT-SUITE ◻ Matlab/Simulink

Domain

Battery
Motor
Fuel cell
Turbomachinery
External Aero
Air intake
Manifold
Exhaust aftertreatment
Muffler
W/S defroster
W/S wiper
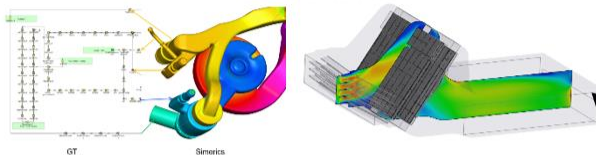Heat exchanger
Underhood thermal
Cabin comfort

Physical phenomenon

- Steady state/ transient
- Compressible/ incompressible
- Multi-phase/ Volume of fluid (VOF)
- Conjugate heat transfer (CHT)
- Moving reference frame (MRF)
- Moving mesh
- Electromagnetic

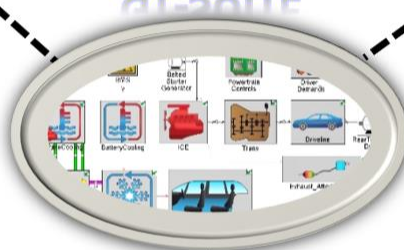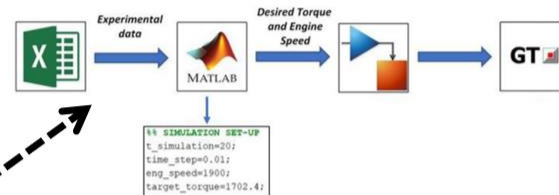**Expertise ◉ Ownership ◉ Cost Competent ◉ Star-CCM+ ◉ Ansys Fluent**

3D CFD

- StarCCM+
- Fluent
- GT-Auto 3DFlow
- Converge

- Manifold
- Aftertreatment
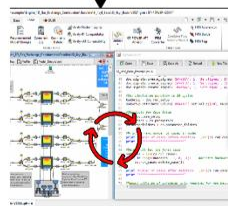- Cylinder water jacket
- EGR mixture
- Underhood cooling system

Matlab, Simulink

- Matlab scripting
- Simulink harness
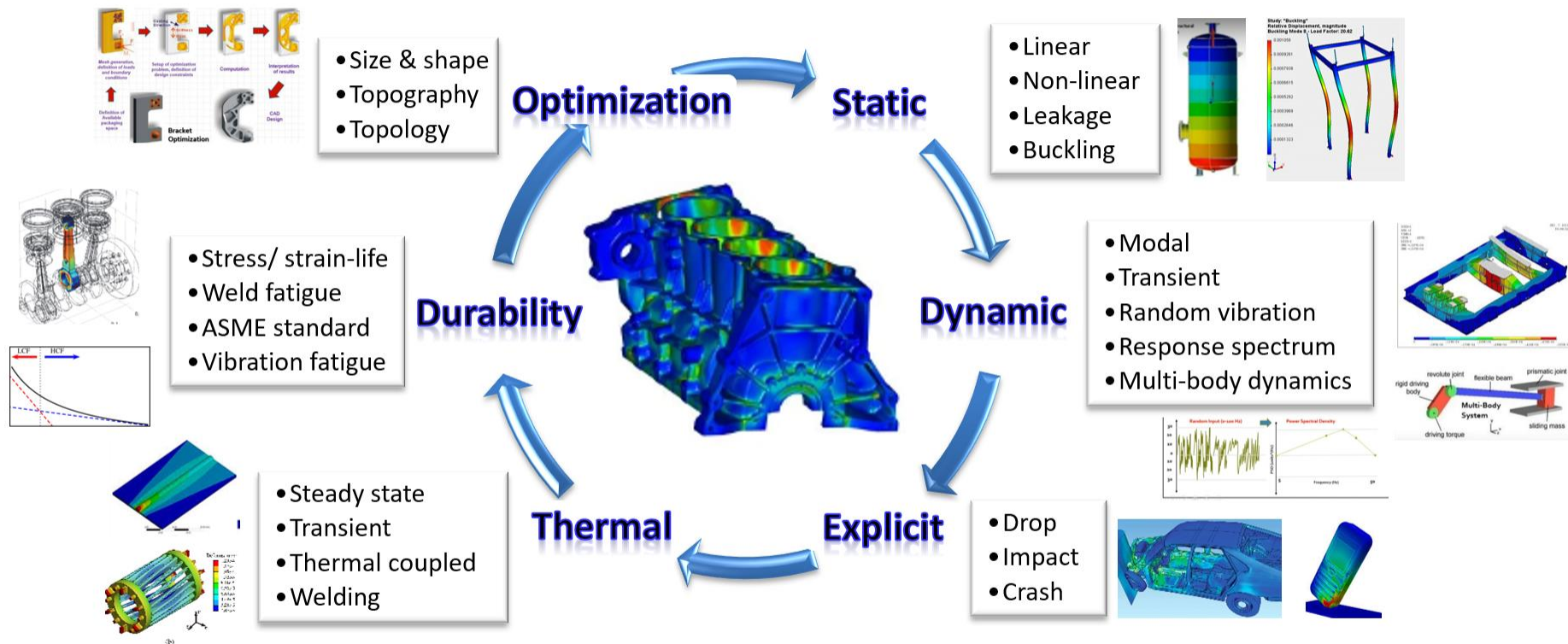- FMU (Functional Mock-up Unit)
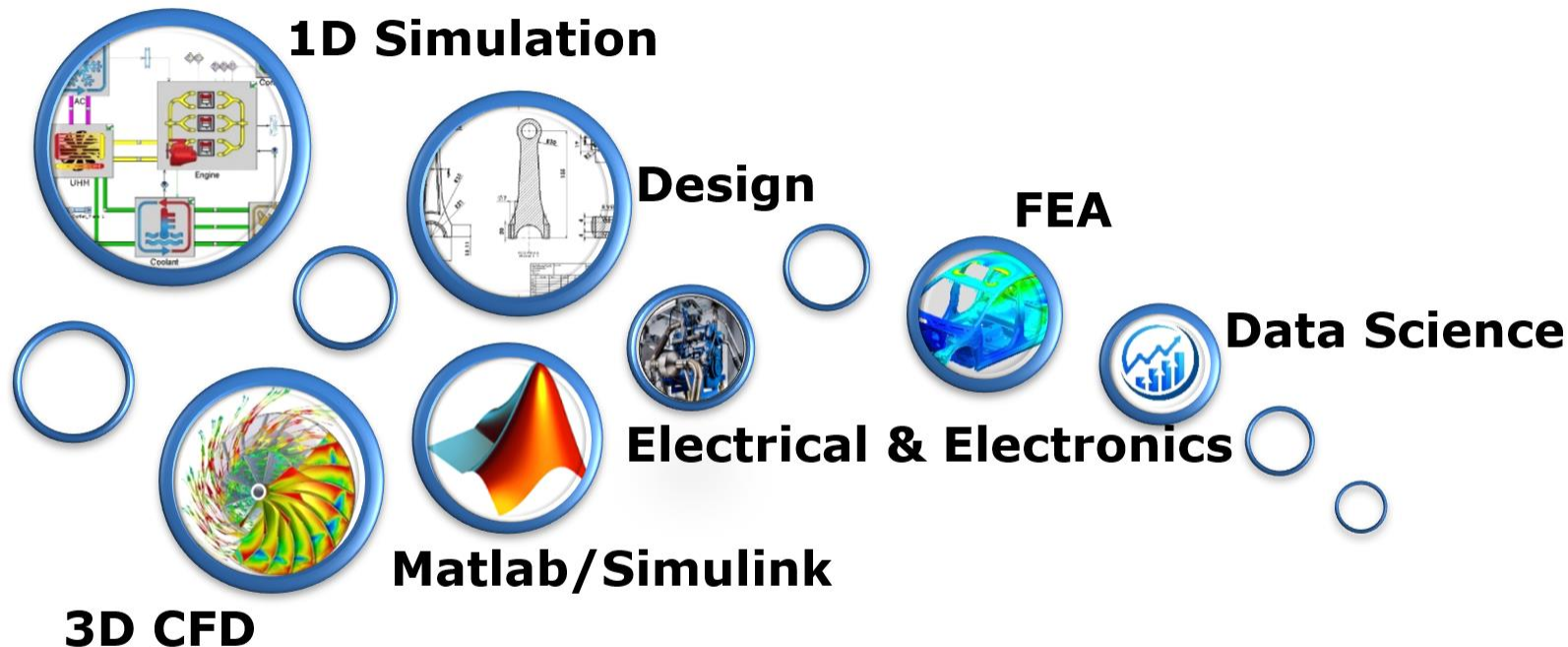- FMI (Functional Mock-up Interface)

GT-SUITE

Python

- Python scripting

Plastic
- Exterior
- Interior
- Underhood
- Lighting
- Safety

Sheet metal
- Exterior panels & structural components
- Fabrication, casting, machining

Analysis
- Mold flow
- Die casting metal flow (HPDC, GDC, LPDC)
- Forming

Chassis
- Frame
- Powertrain & drivetrain
- Suspension
- Steering & axle
- Wheels & tires
- Brakes

Battery
- Cell holder
- Pack cover
- Bus bar
- Strips, clips

Wiring harness
- High voltage
- Low voltage
- Connectors

Center:
- 3D CAD modeling
- Parametric modeling
- Design conceptualization
- NPD/ NPI support
- Design optimization
- Tolerance management
- Product validation
- Cost optimization

Expertise ◉ Ownership ◉ Cost Competent ◉ Multiple Software

Optimization
- Size & shape
- Topography
- Topology

Static
- Linear
- Non-linear
- Leakage
- Buckling

Durability
- Stress/ strain-life
- Weld fatigue
- ASME standard
- Vibration fatigue

Dynamic
- Modal
- Transient
- Random vibration
- Response spectrum
- Multi-body dynamics

Thermal
- Steady state
- Transient
- Thermal coupled
- Welding

Explicit
- Drop
- Impact
- Crash

Expertise ◉ Ownership ◉ Cost Competent ◉ Multiple Software

1D Simulation

Design

FEA

Data Science

Electrical & Electronics

Matlab/Simulink

3D CFD

Cost Effective ⬤ **Zero Lead Time** ⬤ **High Quality Engineers** ⬤ **Prompt Response**

High quality & Zero lead time

1D GT-SUITE

Matlab/ Simulink

3D CFD

6. Strong feedback mechanism: Corrective measures or impart additional skill & knowledge

5. Robust mitigation plan: Buffer resources to deal with attrition

4. Fast ramp-up: Desired competency & skill by in-house technical experts

3. Product knowledge: Engineers are with excellent product knowledge

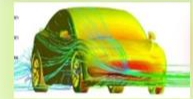**1. Expert driven:** >23 years of experience in 1D & 3D CFD

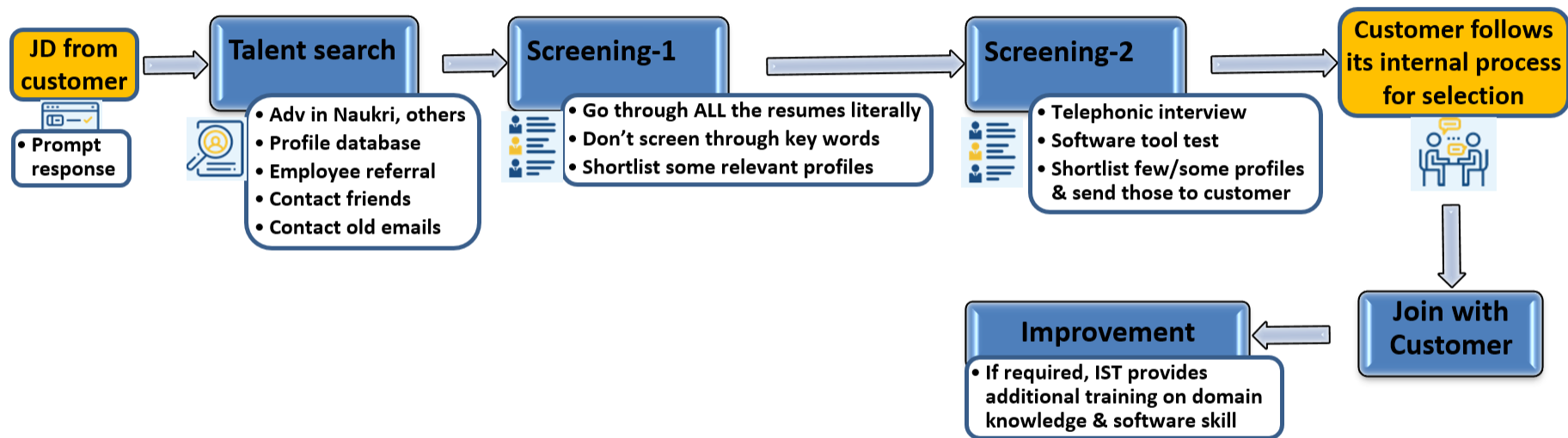**2. In-house resources:** 1D, 3D CFD and Matlab/Simulink engineers

JD from customer
- Prompt response

Talent search
- Adv in Naukri, others
- Profile database
- Employee referral
- Contact friends
- Contact old emails

Screening-1
- Go through ALL the resumes literally
- Don't screen through key words
- Shortlist some relevant profiles

Screening-2
- Telephonic interview
- Software tool test
- Shortlist few/some profiles & send those to customer

Customer follows its internal process for selection

Join with Customer

Improvement
- If required, IST provides additional training on domain knowledge & software skill

Our customers really appreciate about this SPECIAL process...!

Engineers in Different Domains (72)

FEA: 6
Electricals & Electronics: 4
1D, GT-SUITE: 23
1D, Matlab-Simulink: 5
3D CFD: 12
Design: 22
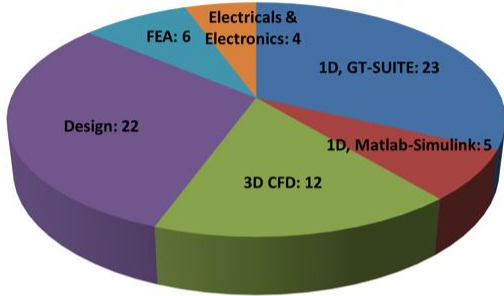
Subir Mandal

- **Founder & Director, Head of Engineering (IST)**
- M.Tech. in Thermal Engg., IIT Kharagpur
- 23+ years experience in E-mobility, ICE, Aircraft engine
- 1D & 3D CFD simulation
- GT-SUITE, Ansys Fluent, Star-CCM+
- Rolls-Royce Power System (MTU), ESI Pacific Mindware, Cummins, GE Aircraft Engine

Ankit Verma

- **Manager – CAE (IST)**
- 3D CFD, Design, FEA
- M.Tech. in Thermal Engg., NIT Agartala
- 5+ years experience in E-Mobility, ICE
- Star-CCM+, Ansys Fluent, ANSA

Pankaj Devade

- **Manager – System Level (IST)**
- 1D simulation
- M.Tech. in Heat Power, GCoE Karad
- 5+ years experience in E-Mobility, ICE
- GT-SUITE, Matlab, Simulink, Simscape

Customer's Expectation	IST's Approach	Self Evaluation	Success
1. Cost effective	Competitive price Value for the cost	9	1. Started in 2017 with 1D Simulation as the core domain, we have over 72 engineers working in multiple domains. 2. Customers in staffing – 9 customers
2. Lead time	Prompt response In-house resource SPECIAL process from open market Data base for resumes	9	
3. Quality	Huge technical database Trainer with rich industrial knowledge & software skill Rigorous filtration from open market Knowledge & skill enrichment	9	
4. Knowledge & skill enrichment	Feedback Weakness/ New domain Session Partners	9	
5. Retention	~3 years Good salary Proactive knowledge & skill enrichment Commitment	7	
6. Replacement	15-20% bench strength 2-3 months notice period	8	
7. Absorption	As per the agreement	9	
8. In-house setup	Excellent in 1D, Matlab/Simulink & 3D CFD Good in Design & FEA	8	

Working Model with Customer

Project

Customer requirement

↓

Initial estimate on time, cost

↓

Finalize objective, scope, deliverables, inputs availability, accuracy, time, cost

↓

Execution Discussion

Result

↓

Delivery

*Payment: Advance/ intermediate/ after completion

Hybrid

↔

Staffing

Customer requirement

↓

Intimate on resource, profiles, rate

↓

Finalize terms & conditions: Duration, rate, rate increase, holiday, leave, absorption

↓

Depute Additional skill

Feedback

↓

Additional requirement

↓

Continuous/ Intermittent

*Payment: Monthly

Collaboration with GT (Gamma Technologies, USA)

IST as service provider

https://www.gtisoft.com/simulation-service-providers/#ist

Participation in GT Conference

Exhibition & Presentation

Exhibition

Exhibition

Exhibition

2018

2020

2023

2025

2019

2021
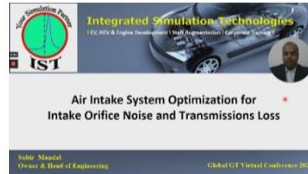
2024

Exhibition

Presentation

Exhibition & Presentation

Thank You

Contact Us

We appreciate you for visiting our website. Please drop us a line for any inquiry on project, staffing, training or case study.

Integrated Simulation Technologies Pvt. Ltd.

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Drop us a line!