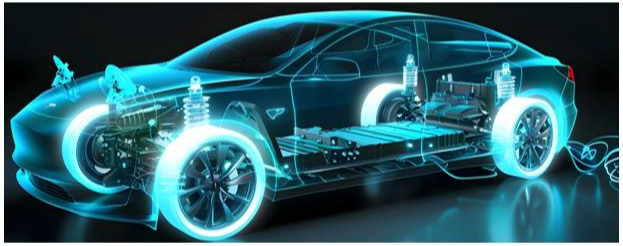
Integrated Simulation Technologies Pvt Ltd



301, Kudale Skyone, Rasikwadi, Punawale, Pune-411033, Maharashtra, India +91-9763909935

subir.mandal@integratedsimtech.com www.integratedsimtech.com

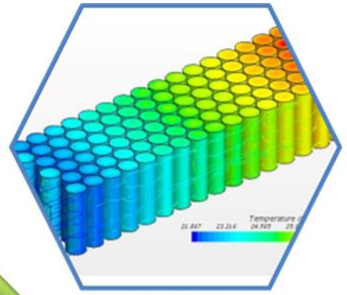
Consultancy Areas

E-Mobility Development

Resource

Expertise → Zero Lead time → Cost Effective → Partnership

IST's USP



E-Mobility Simulation

Staff Augmentation

Customer Requirement

IST's Consultancy

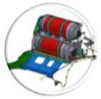
eMobility Simulation: 1D System Level Simulation

Vehicle powertrain

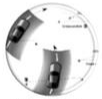
Vehicle thermal management

HVAC

FCEV


H2 tank filling

Engine performance


Vehicle dynamics

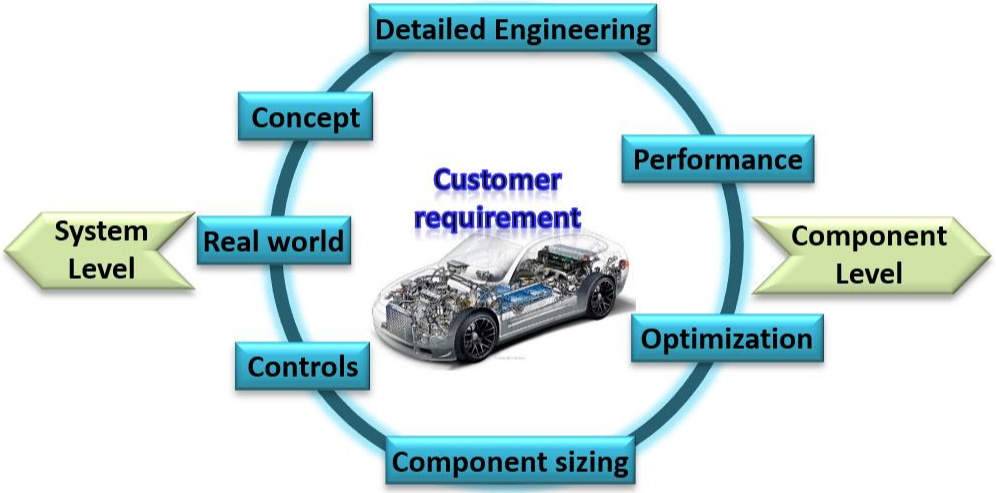
Acoustics

Microgrid

Lubrication

Hydraulics

Crank & valve train

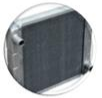


Comprehensive Solution

Battery

Motor

Power electronics


HEX

Fan

Pump

Turbocharger

EAT

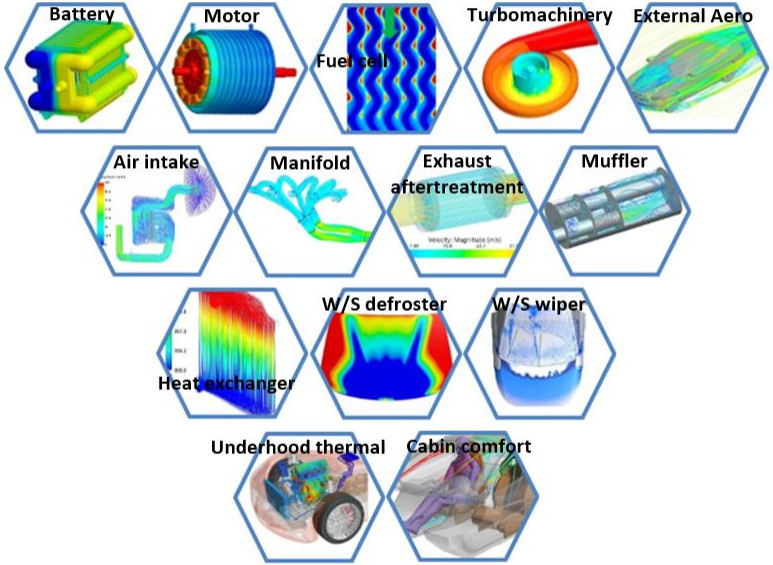
Air intake

Muffler

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

eMobility Simulation: 3D CFD Simulation

Domain



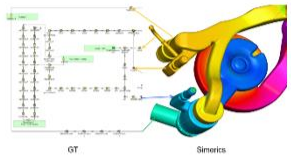
Physical phenomenon

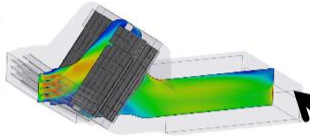
- Steady state/ transient
- Compressible/ incompressible
- Multi-phase/ Volume of fluid (VOF)
- Conjugate heat transfer (CHT)
- Moving reference frame (MRF)
- Moving mesh
- Electromagnetic

Expertise ● Ownership ● Cost Competent ● Star-CCM+ ● Ansys Fluent

eMobility Simulation: Co-Simulation

3D CFD

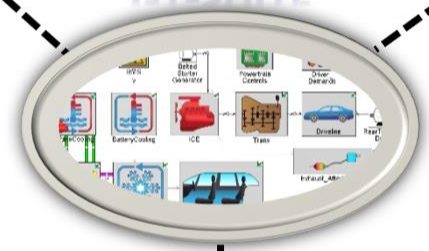




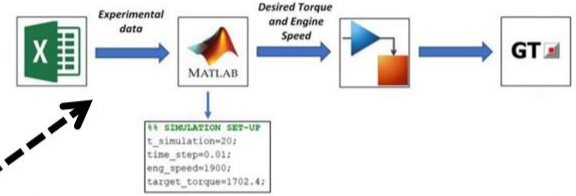
- StarCCM+
- Fluent
- GT-Auto 3DFlow
- Converge

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

GT-SUITE

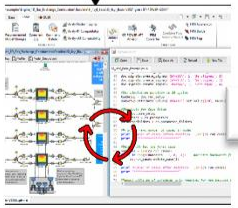


Matlab, Simulink



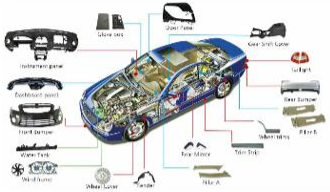
- Matlab scripting
- Simulink harness
- FMU (Functional Mock-up Unit)
- FMI (Functional Mock-up Interface)

Python



- Python scripting

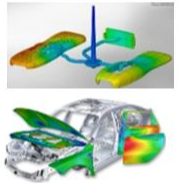
eMobility Simulation: Design



- Exterior
- Interior
- Underhood
- Lighting
- Safety

Plastic → **Sheet metal**

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



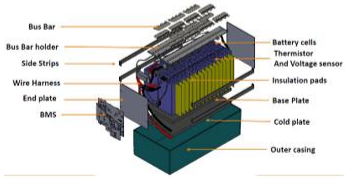
- Mold flow
- Die casting metal flow (HPDC, GDC, LPDC)
- Forming

Analysis

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

Chassis

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



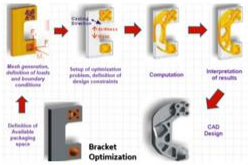
- Cell holder
- Pack cover
- Bus bar
- Strips, clips

Battery → **Wiring harness**

- High voltage
- Low voltage
- Connectors

Expertise ● Ownership ● Cost Competent ● Multiple Software

eMobility Simulation: FEA



- Size & shape
- Topography
- Topology

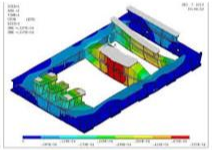
Optimization

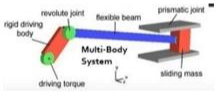
Static

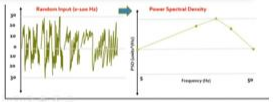
- Linear
- Non-linear
- Leakage
- Buckling

Dynamic

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

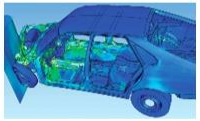


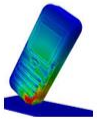




Explicit

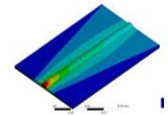
- Drop
- Impact
- Crash

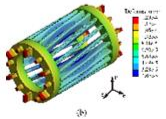




Thermal

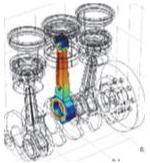
- Steady state
- Transient
- Thermal coupled
- Welding

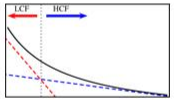


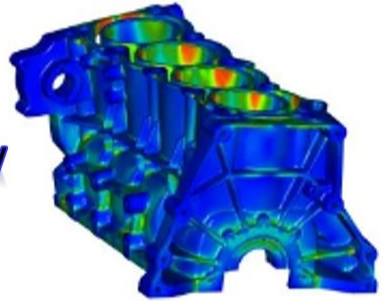


Durability

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

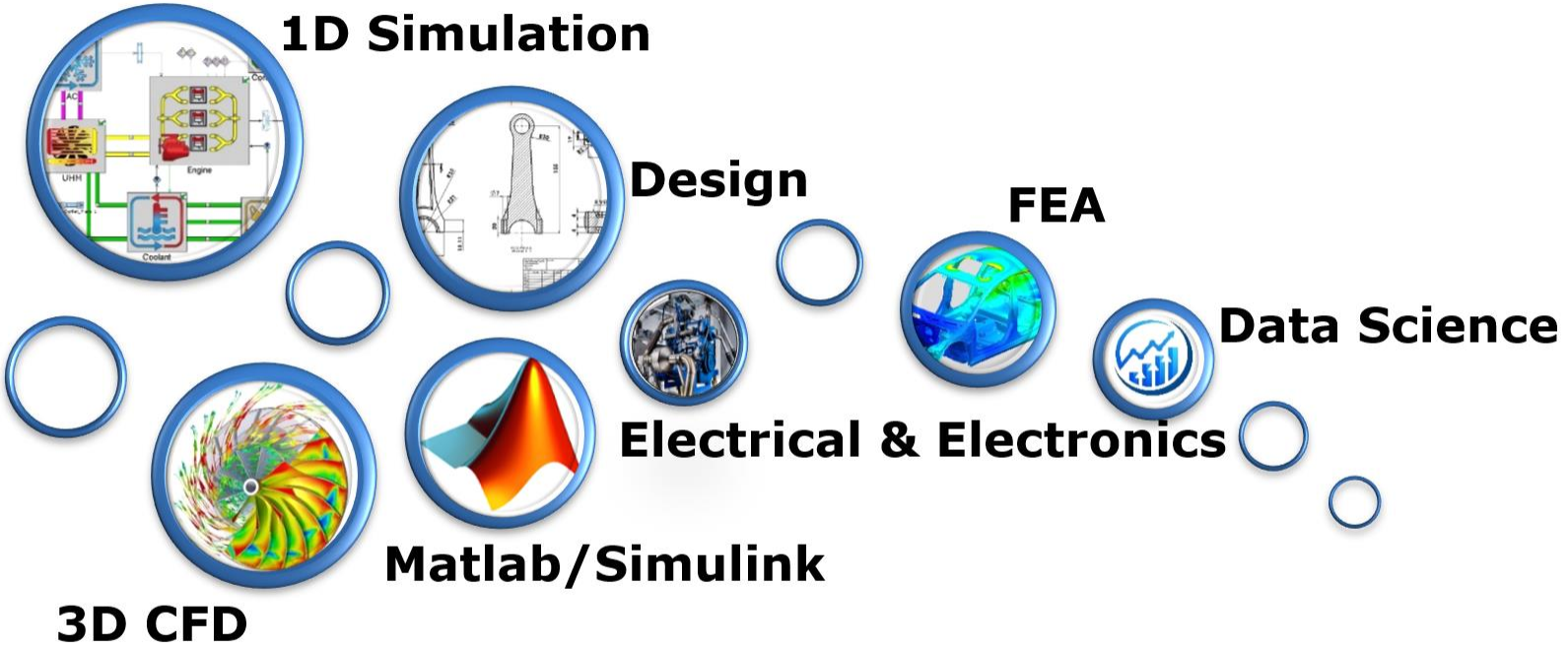






Expertise ● Ownership ● Cost Competent ● Multiple Software

Staff Augmentation: Domains

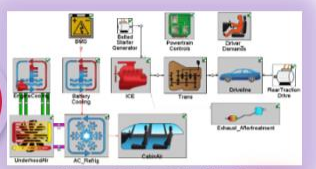


Cost Effective ● Zero Lead Time ● High Quality Engineers ● Prompt Response

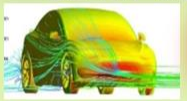
Staff Augmentation: In-house Resource Creation

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

High quality & Zero lead time



1D GT-SUITE



3D CFD

Matlab/ Simulink

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

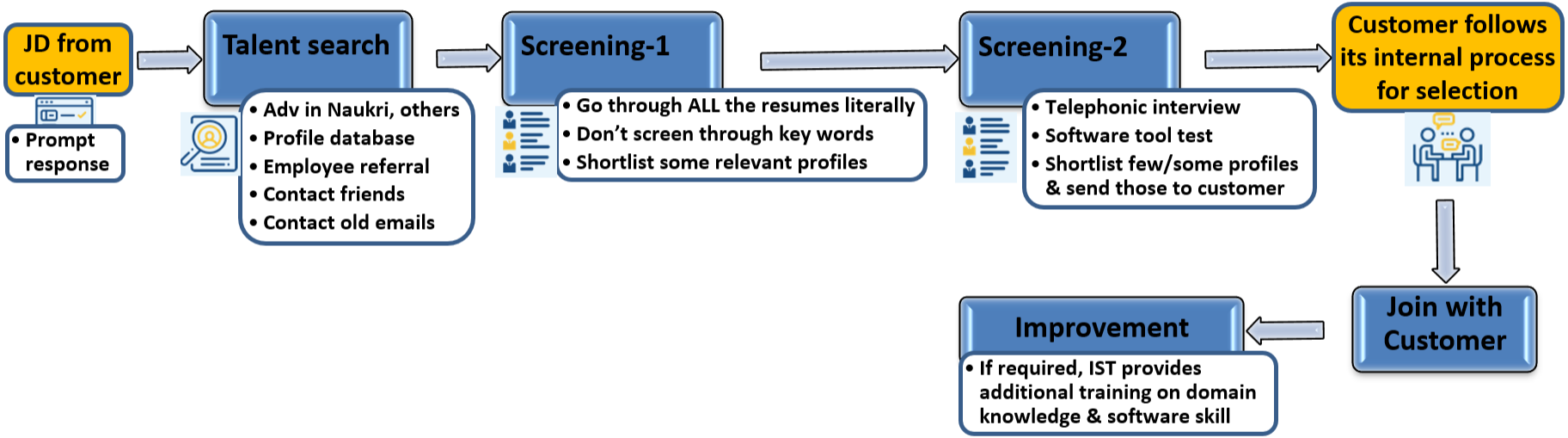
1. Expert driven: >24 years of experience in 1D & 3D CFD

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

3. Product knowledge: Engineers are with excellent product knowledge

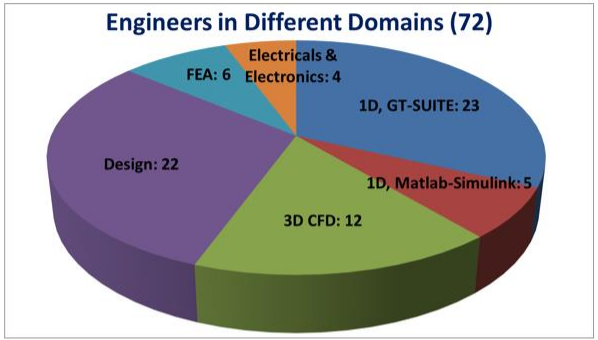
2. In-house resources: 1D, 3D CFD and Matlab/Simulink engineers

Staff Augmentation: Resource from Open Market



Our customers really appreciate about this SPECIAL process…!

Staff Augmentation: Resource Strength



Subir Mandal

- **Founder & Director, Head of Engineering (IST)**
- M.Tech. in Thermal Engg., IIT Kharagpur
- 24+ 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
- 6+ 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
- 6+ years experience in E-Mobility, ICE
- GT-SUITE, Matlab, Simulink, Simscape

Staff Augmentation: Techno Matrix

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 – 11 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	~4 years Good salary Proactive knowledge & skill enrichment Commitment	8	
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)

GAMMA TECHNOLOGIES

Products & Services | Industries & Applications | Resources | Why GT? | Careers | Speak to an Expert | Register

Gamma Technologies frequently receives requests from companies who wish to outsource GT-SUITE simulation projects. While we are pleased to receive such requests, GT's primary focus has always been on providing the best and most advanced simulation software, rather than on consulting services. For this reason, GT refers such requests to professional consulting firms. It is in this spirit that we have established the "Consulting & Services Providers List" program, listing high quality consulting firms experienced in the use of GT-SUITE, which have built long term relationships with Gamma Technologies.

Powertech Engineering
Czero
Mahle Powertrain
Powertrain Technology
EngSim
InDesA
M Plan
FEV
IAV
Integrated Simulation Technologies Pvt. (IST)
AVL-LMM
Thermotec
Porsche Engineering
Danielson Engineering
TheSys
Roush
Design Department

IST as service provider

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

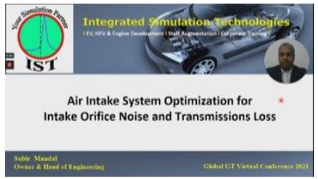
Participation in GT Conference

2018 — Exhibition & Presentation

2019 — Exhibition

2020 — Exhibition

2021 — Presentation



2023 — Exhibition

2024 — Exhibition & Presentation

2025 — Exhibition

Our Office

Advantage IST

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!