The Development of Innovation Capacity in China and India

Automobiles and Aerospace Manufacturing

25. September 2007

This material accompanied a verbal presentation and as such is not a complete record.

Introduction to INCAT

- Leading independent Engineering Services and Product Development IT services company.
- Established in 1984 as an engineering services business.
- Acquired by Tata Technologies (a Tata Group company) in 2005, adding a significant offshore component to an established end-to-end automotive and aerospace engineering services portfolio.
- $250M revenue. Now over 3,500 employees in 13 countries.
- Partnered with the leading automotive and aerospace OEMs.

Automotive Domain Experience

	Conc'pt Eng'g	Adv'd Eng'g	Class A	BIW	Interior	Exterior	Chassis	E/E	PT	CAE / FEA	Manf'g
Chrysler LLC	●	●	●	●	●	●	●	●	●	●	●
GM	○	○	●	○	●	●	○	●	●	●	●
Ford Group	●	●	●	●	●	●	●	●	●	●	●
Tata Motors	●	●	●	●	●	●	●	●	●	●	●
Toyota	○	●	●	●	●	●	○	●	○	○	●
Honda	○	●	●	●	●	●	●	●	○	●	●
Lotus	●	●	●	●	●	●	●	●	●	●	●

Selected Reference Projects

Williams F1
NC Tool Path Programming
Race Car Component Optimisation
Design & Development (including CAE assessment) of
Articulated Gearbox Test Rig

INTERVIEW OF THE FORTNIGHT

ALEX BURNS

The chief operating officer of WilliamsF1 tells Ammar Master that the Formula 1 team is working with Tata Technologies and INCAT on some important projects.

What work are Tata Technologies and INCAT doing for WilliamsF1?
INCAT is engaged on two projects. The first is production engineering of some elements of the 2007 race car. We redesign a complete car every year where about 98 percent of the components are new components. We are in the design phase of that car

Is there also a learning opportunity for Tata Technologies and INCAT from this experience?
We do place great emphasis on doing things very quickly to very high standards. So I hope that there will be some benefits for Tata Technologies in taking this forward. But there will also be technology coming the other way in the longer term. We will get to a point where Tata Technologies is designing complete parts of the car and it is making improvements to the design. So rather than production-engineer a part, they take a part that we currently manufacture, study it and come up with ways to improve that part. We are very open to this as well. We are some months from starting this but it will be the next phase of work.

AUTOCAR PROFESSIONAL

What was the criteria for choosing INCAT?
It was a combination of two key items – expertise and cost. INCAT and Tata Technologies have the skills we need to do this work. We work very much at the very high end of engineering, so we need to have very good people to work

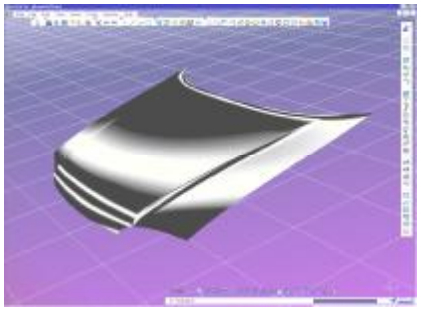
ked at the
s in India
resources

"We share a similar culture, attitude and approach with both INCAT and Tata Group. Like us, they are very competitive."

Case Studies – North American OEM

Client

- North American OEM
- Advanced Vehicle Group and Design Studio



The Problem

- Insufficient resources to execute the exterior surface
- Development for a range of full-size pickup trucks
- Client under significant cost- and time-saving pressures

INCAT approach:

- Onsite/offsite program management and client interface
- Offsite and offshore design execution
- Advanced usage of CATIA® V5 methods and capability
- “Overnight” capability

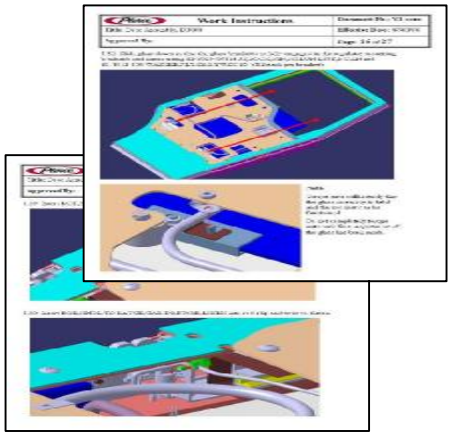
Value to Client:

- Demonstrated E&D capability in a local and offshore secure environment
- **32%** project cost savings vs. conventional delivery model

Case Studies – Specialty Vehicle Manufacturer

Client

- North American specialty vehicle manufacturer



The Problem

- Insufficient engineering resources to execute new product delivery schedule – 20 door designs incl. FEA and all CAD files integrated into Client Data Systems
- Client under pressure by market demand, needed to meet aggressive timeline and cost-saving targets

INCAT approach

- Integrated onsite program management
- Offsite and offshore engineering and design execution
- Full leveraging of “round-the-clock” execution capability

Value to client

- **43%** project cost savings vs. conventional delivery model
- Reductions in components (-45%), mass (-20%), manufacturing time (-52%)
- Aesthetic and ergonomic improvements over current product
- Shared engineering patents between INCAT and client

Case Studies – Tata Motors

Client

- Tata Motors – Commercial Platform, Pune, India

The Problem

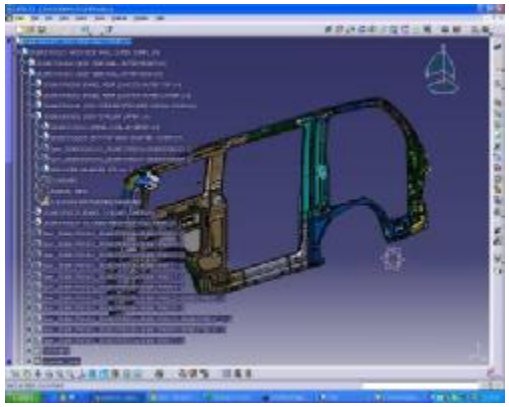
- Insufficient resources to execute major facelift in BIW within allocated timeframe, utilizing common panels / structure, Integration of Eng'g teams and CAD data to be seamless to the client

INCAT approach

- Onsite and offsite delivery team, working hand-in-hand with customer team in BIW development
- Supplier part development parallel with BIW design activity
- Quality checks performed by INCAT and data released directly in customer native PLM system - TCe

Value to Client:

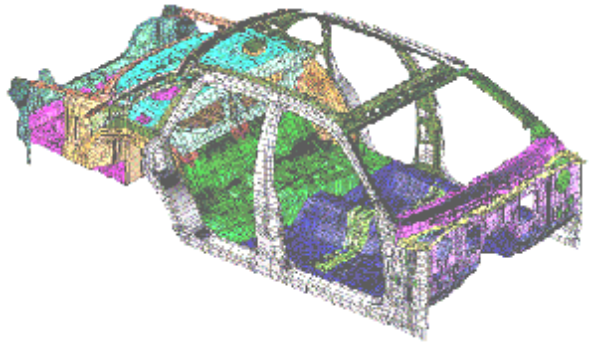
- Core BIW design from concept through manufacturing
- Design for manufacturability and design for assembly
- advanced usage of CATIA V5 methods and capability



Case Studies – North American OEM

Client

- North American OEM
- CAE Group - all vehicle engineering platforms



The Problem

- Insufficient resources to execute CAE needs demanded by an increasing future product pipeline
- Client under significant cost saving pressures

INCAT approach

- Fully-integrated onsite program management and customer liaison
- Offshore analysis execution and design improvement recommendations
- Full leveraging of “round-the-clock” execution capability
- Leveraging of other Tata Group companies’ capabilities

Value to Client

- **50%** cost savings vs. conventional staffing augmentation model
- Conformity to common standards and processes across platform increased

Globalization of Innovation

- **Automotive and aerospace industries are moving from outsourcing to globalizing innovation**
- **Globalizing innovation is different than IT (ITO) or Business Process Outsourcing (BPO)**
- **Access to qualified personnel is a key driver to globalizing innovation**

MAKE IT REAL