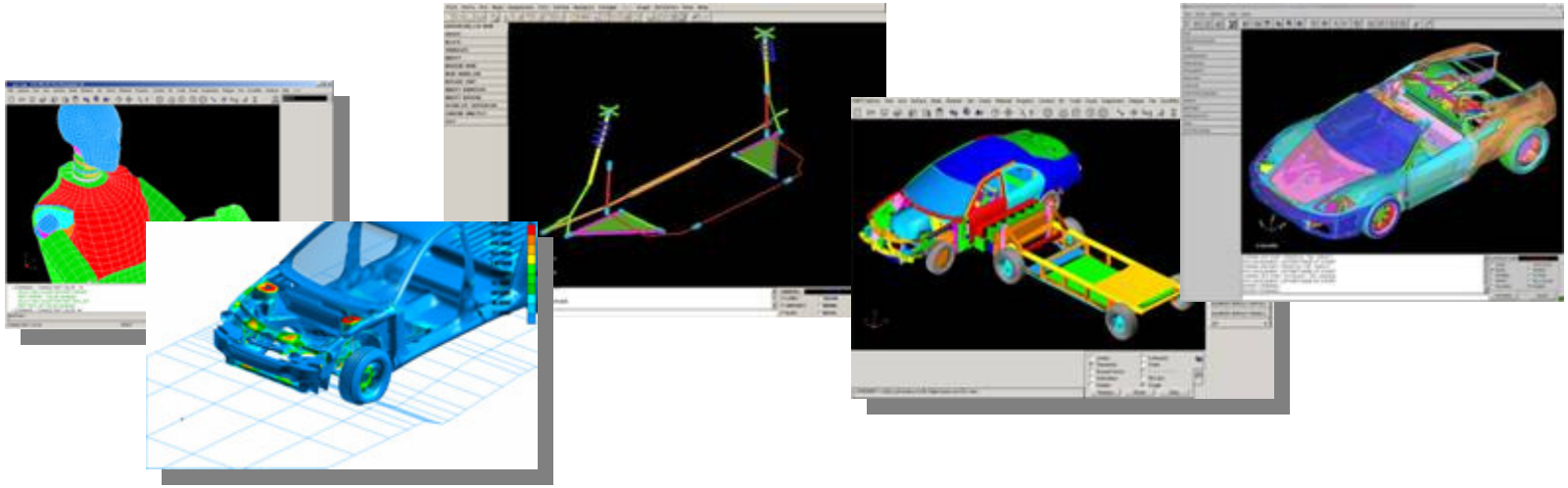

ASME 2005 DAC Panel Discussion: "Offshore Engineering: Where are the Future ME Jobs?"

Tim Palmer
Director of Business Development
Engineering Technology Associates, Inc.

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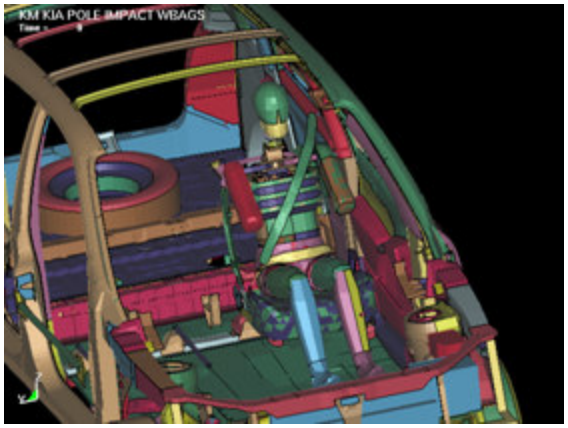
www.eta.com

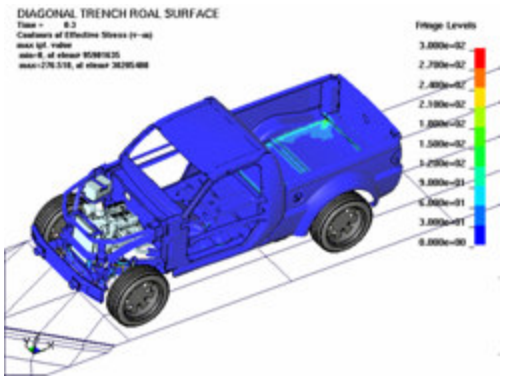
Overview

- Present State of Offshore Engineering
- Future Trends in Offshore Engineering
- Where are the “good” ME jobs in the US?
- Adapting to these changes

ETA Background

- Established in 1983 to service US auto industry
  - Have supported vehicle development programs worldwide
  - Diverse software client base
    - Automotive/Transportation
    - Aerospace
    - Military
    - Consumer Products (cell phones, golf clubs
- Software Developer
  - Develop Simulation Suites for Engineers
    - eta/VPG
    - eta/DYNAFORM
    - eta/FEMB
- Engineering Services
  - Virtual Product Development
  - Focus on vehicle impact/occupant safety
  - Advanced durability and NVH simulations





ETA & Offshore Engineering

- ETA established a software development center in Shanghai China in 1996
  - After nearly ten years we have found the following
    - Management is the key
      - There may be no “Quality Culture” in place
    - Well qualified engineers and programmers are plentiful
    - Cultural issues are reduced by ETA Management Team
    - Output has been consistent and dependable
    - Success would not have been possible without using offshore resources
- In 2001, ETA established an engineering center in Chennai, India
  - Results are mixed, but generally positive
  - Turnover of employees is an issue
    - As more opportunities arise, it becomes harder to keep well qualified engineers
    - Costs escalating quickly

Offshore Engineering

- Historically: How did we get to where we are today?
  - Need for cost reductions
  - Need for reduced development schedules
  - Need to alleviate worker shortages
- Infrastructure was needed to support far-flung operations
  - Internet as the backbone for this type of collaborative environment
- Has allowed for shifting of jobs, hiring a different set of skills in the US
  - ETA Example

Present Status

- MANY companies investigating
- SOME companies doing it
- FEW companies “Successful”
  - Some call centers negatively received and pull back to “lower cost regions”
- Trust is a big issue
  - “Work with me to help me replace you”
- Need to blend work styles and cultures to be successful

Trends in Outsourcing

- Several Trends:
  - Full outsourcing
    - Many options
      - China
      - Philippines
      - Malaysia
      - India
      - Eastern Europe – Romania, Slovakia, Russia, etc.
  - 2nd Tier Outsourcing
  - Process Engineering and Automation

Various Regions

- Established
  - India
  - China
  - Mexico
- Emerging
  - Romania
  - Slovakia
  - Czech Republic
  - Russia, Belarus

Trends in Outsourcing

- 2nd Tier Outsourcing:
  - Local (US-based) companies responsible for delivery of engineering
    - Blended Resources
  - May leverage offshore resources to reduce costs and improve timing
  - ETA's Offshore Engineering Model for US Clients
    - US responsible for quality, timing, delivery
    - Offshore resources responsible for labor-intensive activities
    - Lets clients be confident that US quality levels are met, local communications

Process Engineering and Automation

- Automation of Processes will have a big effect on offshore engineering
- Will offshore engineering be necessary?
  - ETA has seen a reduced reliance on offshore when automated processes are implemented
  - Example: improved automeshers and automated model assembly reduce the reliance on low cost labor to deliver at cost targets
- Makes *some* offshore engineering a questionable business case
  - Less need, trend toward higher labor rates
  - We may actually see less work going offshore in the next 3-5 years

Where are the ME jobs in the US?

- One unintended (possibly unintended) outcome of the Offshore Engineering Trend
  - Entry level jobs have disappeared in the US
  - The on-the-job training environment is fading
  - No “grunt jobs” to justify hiring low productivity people
    - Shifted to offshore
- Up-side: Jobs that are here are more “managerial” but need technical experts to guide and coordinate offshore resources
  - New opportunities for engineers
  - New markets opening up
  - Less labor intensive work
  - More time and resources for innovation
- Demographics may be in the favor of younger engineers
  - Many retirees in the next 10-15 years
- Military/Government Engineering positions much more stable
- Research Positions not easily sent offshore

Adapting to Changes

- US Companies need to adapt
  - Hiring more well-rounded engineers who coordinate and manage technical projects
  - Management training for Offshore Engineering
  - Let US workers know they are valued and will continue to be
  - Look at Offshore locations as potential new customers
    - ETA's software sales in India have grown 50% annually, selling to other offshore engineering sources
- US Engineering Education needs to adapt
  - Prepare engineers for a "world view" of teamwork and cultural issues
  - Truly a global engineering community
  - Encourage collaboration with remote industry partners or universities
    - Open minds to seeing how someone from a different culture may see your engineering tasks
  - Opportunities to partner with local universities

Conclusions

- Successful implementation relies on a good management plan
  - You can't just hope it will happen
- There is hope for new grads, and career changers
- In auto industry fewer entry level jobs
  - The ones that are there are better jobs!
  - Innovation will always have value