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Realistic Vision of the Future
-or-
How To Get There From Here

Information Sciences Institute, Computational Sciences Division

ISI Information Sciences Institute
USC

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Great Workshop!

ISI Information Sciences Institute

Great people, ideas, and talks

Too much food ☺

Thanks to Rich, Neil, et.al.

Now what?

A Modest Proposal

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Let's Not Forget Our Past
UPC the "Legacy"

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- Govt. bought T3Es
  - UPC = T3E for C programmers
  - *Added PGAS abstraction*
- Application programmers adopted it
- There now exists a body of code
- Therefore, UPC is a legacy language
  - *Vendors have to support it indefinitely*
- Same thing is happening for CAF
  - *John Levesque's performance tuning*

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Legacy {Chapel,Fortress,X-10}

How would I try to make a new language a success?

Repeat the same exercise:

1) Find something I can't do today

- **Or could do way better (Levesque)**

2) Implement it in the new language

3) Addict a Significant User Base

- **Not just a research demonstration**

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Prior Art for Govt. Influence

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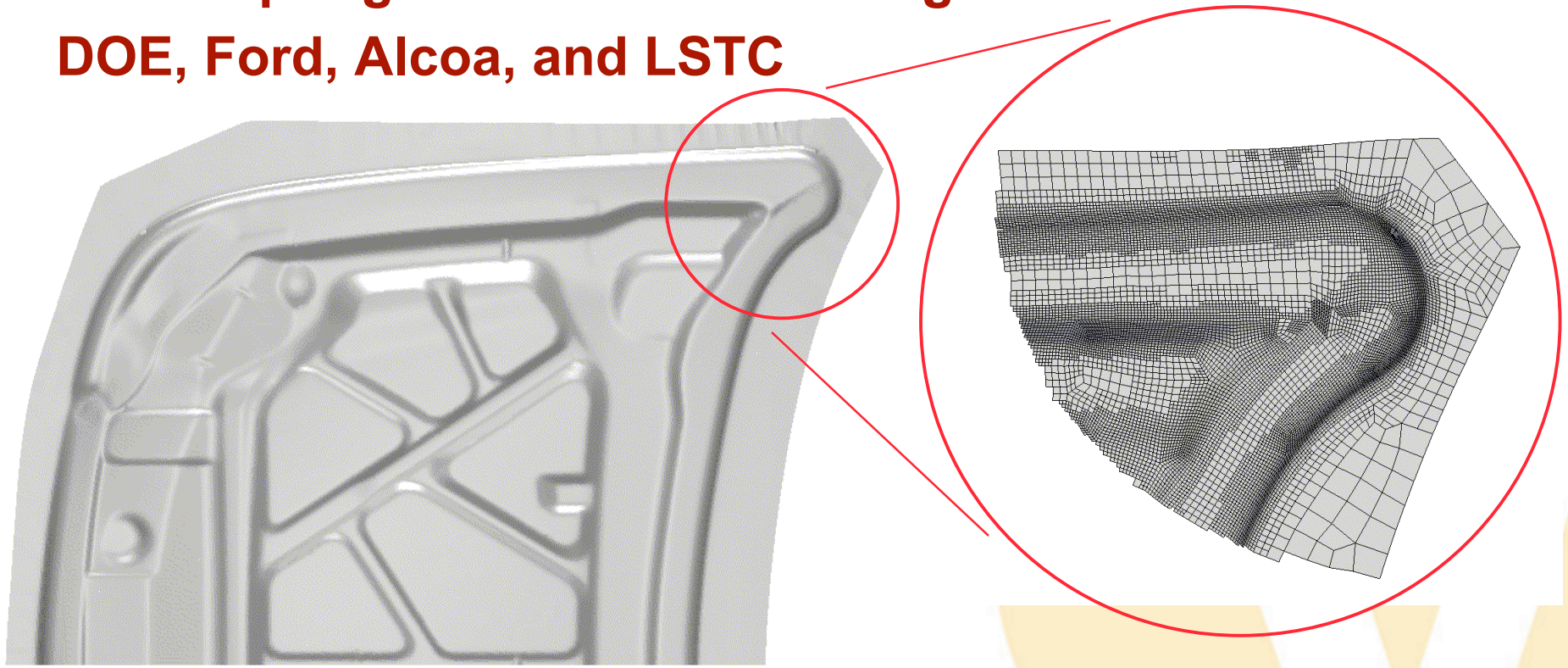
Late 1990's Partnership for the Next Generation Vehicle

Model springback in metal forming

DOE, Ford, Alcoa, and LSTC



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Potential Partnership

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Vibration/Buckling Analysis (NASTRAN)

- Government Sponsor – {NASA,DOE,DOD}
- Government User – {ARC,Sandia,TARDEC}
- Industrial User – {GM,Ford,Chrysler}
- Math experts – {Boeing,Sandia}
- S/W vendor – {MSC,UGS,ANSYS,LSTC}
- System vendor – {Cray,HP,IBM,SGI,SUN}

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Other MCAE Possibilities

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- Address any major MCAE bottleneck
  - Contact in Crash
  - Solvers for implicit codes
    - Reordering and symbolic preprocessing
  - Arbitrary Constraints
    - Sparse matrix * sparse matrix
  - Aero-acoustics?
- Do so in context of a major application

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There Must Be Others

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ECAD or TCAD (for us EEs)

CFD (ANSYS bought Fluent for > $500B)

Stockpile Stewardship

Business Applications:

- PeopleSoft?

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Now Some Real Visionaries ☺

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~~Peter Kogge~~ → ABQ

Bill Gropp

Jeff Vetter

Thomas Sterling

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