



# Issues associated with insertion and implementation of new surface engineering technologies

HCAT Program Review  
Greensboro, NC  
March 2005

# Documents we have on HVOF (landing gear)

**And that's just landing gear!**

Environmental Security Te...

THE CANA...

REPLACE...

RE...

ELECT...

USING I...

HVO...

EVALL...

HERO...

HE...

LAND...

LAND...

PROD...

exc...

in p...

The p...

the r...

conse...

The exc...

in p...

The T...

conve...

the wr...

PREPA...

CHEC...

APPR...

PREPARED

CHECKED

APPROVED

Prepared:

Checked:

Approved:

PREPARED

CHECKED

APPROVED

Prepared:

Checked:

Approved:

PREPARED

CHECKED

APPROVED

Prepared:

Checked:

Approved:

LINKING GLOBAL TECHNOLOGIES WITH MARKETS

**Use of Thermal Spray as an Aerospace Chrome Plating Alternative**

Courtesy U.S. Navy. Photo by Ensign John Gray

Report to:  
William Green  
Geo-Centers

Rowan Project #: 3105JSF3

Contract Number: N00173-98-D-2006, D.O. 0002  
Subcontract Number: GC-3363-99-004  
P.O. Number: 28578MK

Report Number: Final

Date: October 27, 2000

Authors: Keith Legg (<mailto:klegg@rowantechnology.com>)  
(Rowan Technology Group, Principal Investigator)

John Sauer  
(Sauer Engineering)

UNCLASSIFIED NON-PROPRIETARY - Distribution Statement A

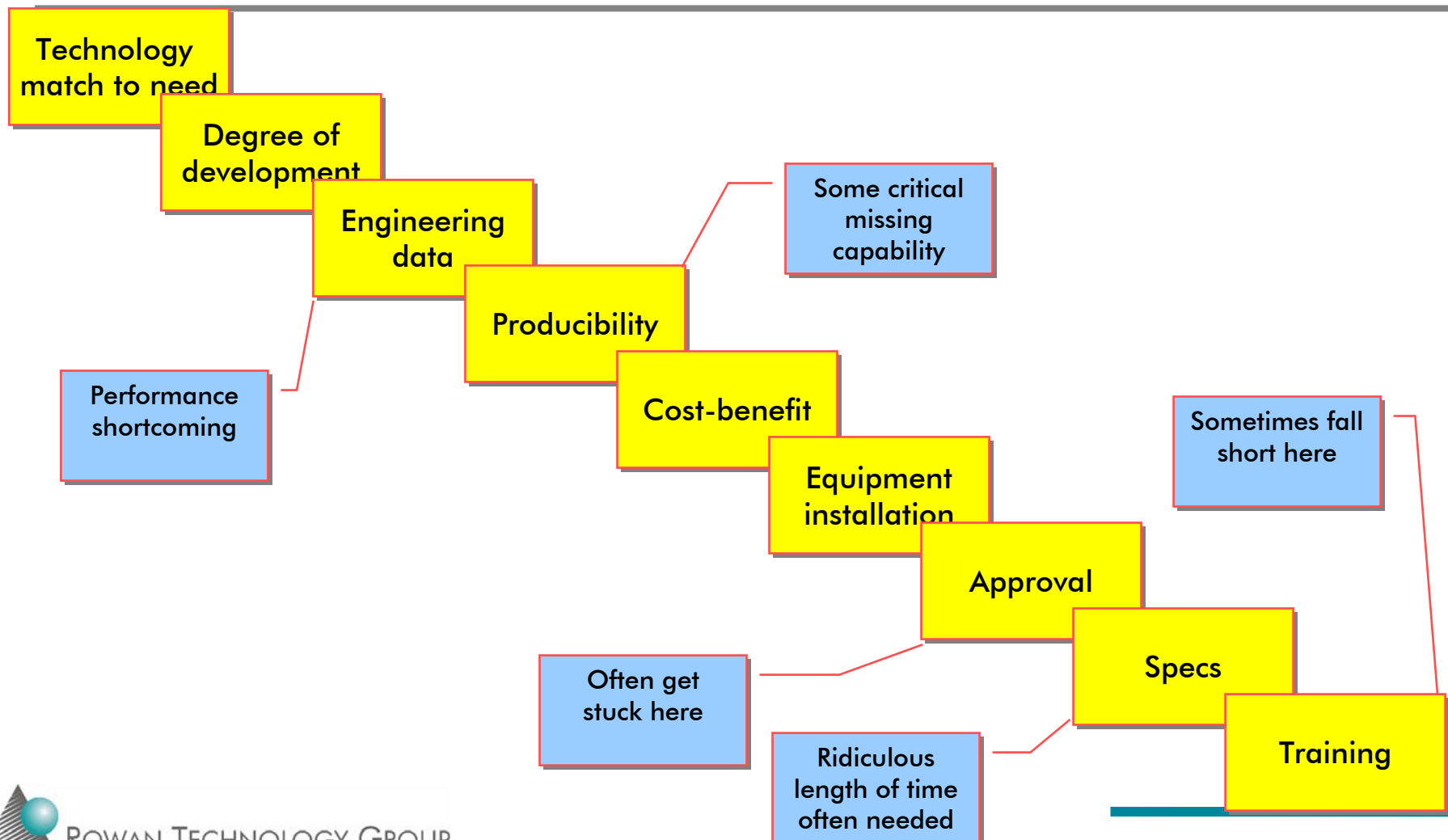
ROWAN TECHNOLOGY GROUP  
1590 S. Milwaukee Ave., Suite 205, Libertyville, IL 60048, U.S.A. • 847-680-9420 • Fax: 847-680-9682  
Email: [rowan@rowantechnology.com](mailto:rowan@rowantechnology.com) • [www.rowantechnology.com](http://www.rowantechnology.com)

# What are we seeing in new programs?

---

- ❑ A lot of issues we never thought about when doing the validation
  - Using the wrong coating so they get severe counterface wear
  - Spraying into snap ring grooves
  - Having to worry about adhesion on IVD on plasma spray Mo
  - Design engineers unsure of runout
- ❑ For F-35 we are developing Guidelines documents
  - “How I Did It” by Baron von Frankestein, that includes all the details not in the specs
  - Could we do something better?
  - Interactive web-based training?

# Where do we have the most trouble?



# Minimizing engineering risk

---

- ❑ How can we best make sure we do not have an important shortcoming in performance or producibility?
  - Finding a problem too late locks us in to a specific set of coating parameters, leaves no money to fix it
  - With new technologies, need to get data up-front at the extremes before launching full JTP
  - How best do that?

# Approval

---

- ❑ Approval is relatively straightforward when the people doing the work are also the decision-makers (Air Force, OEMs)
  - They know all the details of the technology, its capabilities and limitations
- ❑ How can we smooth the approval process for Navy and Army?

# Specifications

---

- ❑ Specs usually have to be internal
  - Takes years and thousands of gray hairs to get industry specs
  - Is there a better way of doing this?

# Training

---

- ❑ Some organizations find themselves in a bind with training
  - HCAT trained OO-ALC through Jerry Schell
  - PEWG supplied training at OC-ALC through Engelhard
  - Training on nCo-P at HAX will be done by close collaboration with Integran and installation of equipment at JAX
  - Same thing presumably for Al-Mn at NADEP NI
  - That all works for the first folks – what about the rest (e.g. WR-ALC)?

# Other information and assistance

---

- What else is needed? Do we need
  - Guidelines?
  - Formal or informal training?
  - Better way of anticipating technical problems?
  - Better ways of finding the \$\$ for implementation?