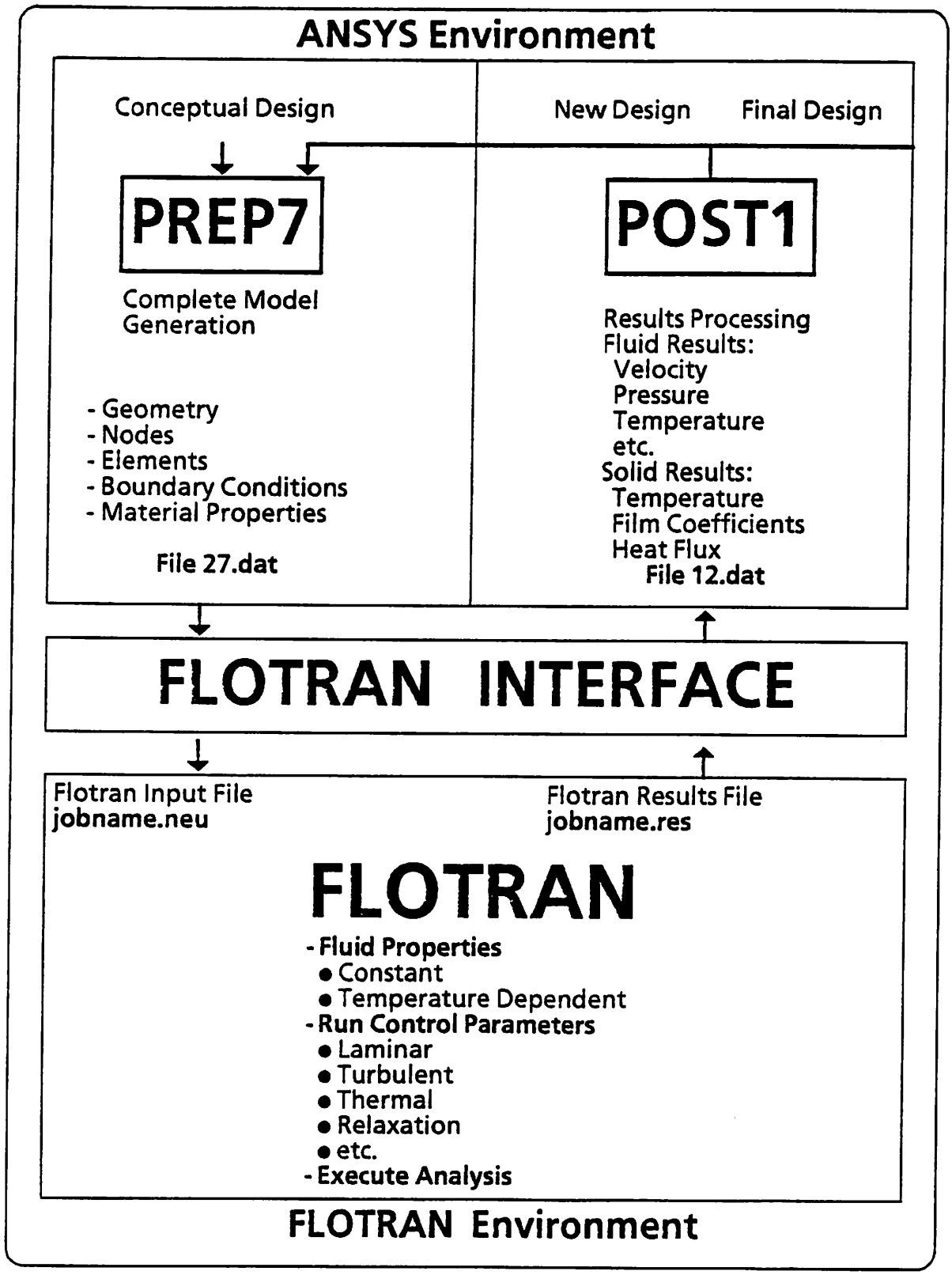
ANSYS - FLOTRAN



Interface

FLOTRAN

★ **derzeitiger Stand 10/89**
- stationäre Strömung und/oder Wärmeleitung
- 2- oder 3-dimensional
- laminar oder turbulent
- inkompressibel, viscos, newtonisch
- Pre- und Postprocessing und ANSYS (PATRAN, SUPERTAB)

★ **zusätzliche Entwicklungen bis 6/90**
- transient
- kompressibel
- nicht newtonisch
- Strömung durch poröses Material
- Verbesserung des ANSYS Interfaces

★ **Besonderheiten**
- konzipiert für Workstations
- Verwendung der Vorteile des Differenzenverfahrens und der Finite Elemente Methode

↓	↓
itarative Gleichungsauf-lösung, sequentiell für Druck und Geschwindigkeit geringe Rechenzeit kein Speicherplatz	flexible Netzbildung beliebige Geometrie

- gleiche Ansätze für Geschwindigkeit und Druck
- "monotone streamline upwind" Approximation der Advektionsterme

★ **Zielindustrie**
- Automobilbau und Zulieferer
- Luft- und Raumfahrtindustrie
- Elektronik
- Anlagenbau
- Petro-Chemie

FiiNP.ORG

```
*titl
resonanter Stroemungssensor GMS/HSG-IMIT
*expa
*fiprep
scale(valu=1.,velo=1.,temp=1.)
prob(2-d,nonl,lami,weak=0)
pres(penal=1e-5,disc)
solu(s.s.=30,velc=1e-3,resc=1e-3,accf=.4)
/solu(s.s.=30,cgs,cr,prec=21,accf=.4)
/solu(segr=30)
/solu(segr=30,cgs,cr,prec=21)
exec(newj)
opti(upwi)
upwi
/U V W P S T K E
.5 1. 0. 0. 0. 1. 0. 0.
/rela
/U V W P S T K E
/.1 .2 0. .1 0. .1 0. 0.
/icno(velo,stokes)
/einlesen aus FDREST
icno(velo,zero)
icno(temp,cons=20)
/icno(~~temp~~ velo,read)
/heatsource 6.7e8
/source(heat,cons,grou=4)
/6.7e8
/heatsource 3.3e8
/source(heat,cons,grou=5)
/3.3e8
/luft mate=1
visc(set=1,cons=15.e-6)
dens(set=1,cons=1.2)
spec(set=1,cons=1007.)
cond(set=1,cons=.026)
/silicium mate=2
dens(set=2,cons=2329.)
spec(set=2,cons=703.)
cond(set=2,cons=156.)
/keramik mate=3
dens(set=3,cons=3240.)
spec(set=3,cons=645.)
cond(set=3,cons=20.)
/aluminium mate=4
dens(set=4,cons=2700.)
spec(set=4,cons=896.)
cond(set=4,cons=211.)
```

Temp.verteilung wird aus dem dump FDREST

```
/materialien
mate(type=1,mden=1,mvisc=1,mspht=1,mcond=1)
mate(type=2,mden=2,mspht=2,mcond=2)
mate(type=3,mden=3,mspht=3,mcond=3)
mate(type=4,mden=4,mspht=4,mcond=4)
renu
NODES(ANSYS)
ELEM(GROU=2,SOLID,QUAD,NODES=4,MATE=2,ANSYS)
ELEM(GROU=1,FLUID,QUAD,NODES=4,MATE=1,ANSYS)
ELEM(GROU=3,SOLID,QUAD,NODES=4,MATE=3,ANSYS)
ELEM(GROU=4,SOLID,QUAD,NODES=4,MATE=4,ANSYS)
ELEM(GROU=5,SOLID,QUAD,NODES=4,MATE=4,ANSYS)
ELEM(GROU=6,PLOT,EDGE,NODES=2,ANSYS)
ELEM(GROU=7,PLOT,EDGE,NODES=2,ANSYS)
ELEM(GROU=8,PLOT,EDGE,NODES=2,ANSYS)
END
*END
```

} FIMEJH.DAT

FIINP.STR : FIECHO-Datei

FIMEJH.DAT : von ANSFID erzeugt.

(NODEJ
BCNODEJ
ELEM)

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To my wife Rajani