Notes on usability of Soar

- Based on two 1-hour meetings
- Soar workshop 27 June
- About two groups of 8
- Frank Ritter transcribed
- Jonathan Gratch's group's notes separate
- Doug Pearson's group's notes merged in here

# Users and User goals (tasks)

- Users of models
    - Novice soar programmers
    - Expert soar programmers
    - integrator of Soar in a larger system
    - Simulation user where model lives
    - Other stakeholders (demo audience, possible users)
- Tasks with models
    - Installing soar
    - Learning the theory
    - Learning the system
    - Conceptualizing the problem
    - Reusing
    - writing
    - Running
    - Understanding
    - Demo-ing (executable and/or at a workshop)
    - Debugging
    - Integration with other tools/simulations
    - Fielding
    - Porting to another machine
    - Validating (regression testing, qual & quan matches)
    - maintaining

State of the Art

Modeling Tasks	Soar	Best in all architectures
Learning the theory	UTC, papers,FAQ PST	PhD, whole books mathematica livebooks
Learning the system	coloring book eaters/tank	Interactive tutorials Benjamin materials
Installing	InstallShield	"InstallShield"
Demo-ing	ICT	plan tracers/viz tools
Conceptualizing problem	PSCM, <u>gentle intro</u>	UML and equiv.
Reusing	tacAir	ACT-R/NIST web site Java libraries

NB: it's a big world of behavior
NB: may be hard to do well even if done
NB: embedding of decl' knowl. in rules may be a/the problem

Writing	VisualSoar	JACK/Expert Sys IGEN?/Visual-soar?
	Soar-mode	all IDEs

NB: Looks good may not be good, but gets the sale
NB: Scalability will vary with tool as well

Running	TSI soar-mode?	Web forms(LSA)/IDEs Stand-alone applications
Understanding	Vista-specific Soar-Doc	Cogent/IGEN-static visualization tools
Debugging	TSI Vis-soar+soar-mode	IDEs/Visual-Soar
Porting	makefiles	JAVA
Fielding	scripts	InstallSheild
Validating	DC counts ACT-R macros	

    NB: Wallace thesis and Ritter thesis

Integration with ...	gSKI / SWIG	amant's bitmaps/HLA (?!)
Maintaining	visual-soar	RCS/CVS/IDEs

Is Soar Hard to Use? Yes

- Received knowledge by modelers
  (Pew & Mavor, 1998; &   Ritter et al., 2003)

- Navy aviator SMEs don't like even the best displays   (& Avraamides &   Ritter, 2002)

- People don't come back:

  - 50% at 1 meeting, 70%

  - 2 or less (13 meetings)

  - Only 2% 10 or more

  - (don't know expected rate)

- Soar sites not growing?

Morgan 03
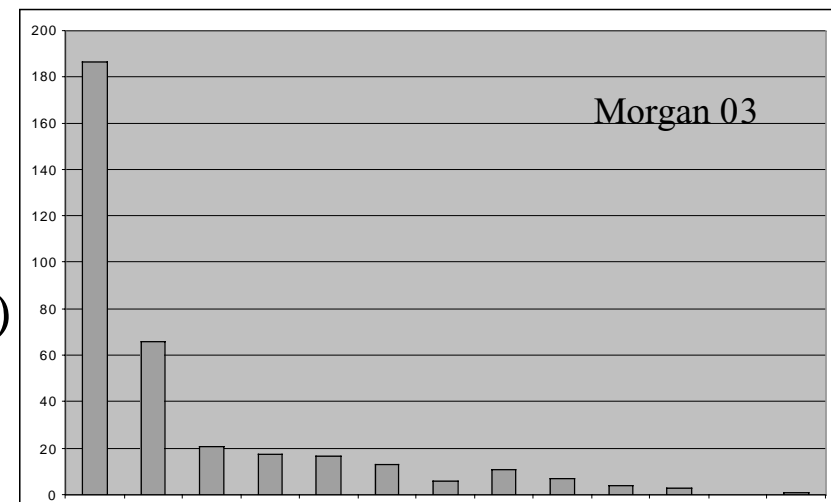
Is Soar Hard to Use? No!

- Reaches places other architectures can't reach (Pew & Mavor, 1998; & Ritter et al., 2003)

- Navy aviators and other SMEs may use it more than any other architecture

- Well cited benchmark, many have come to workshop

- Some modelers like it, particularly at Michigan, SLC, WashingtonDC

So, Why is Soar Hard to Use?

- Large system, large, strong theory
  - Breadth attempted
  - Expectations of 'easy to use' may be wrong
- Indirection in theory
  - rules and operators vs. rules *as* operators
  - thus syntax is difficult and not supported
  - Informationally undense code
  - with distal connections
- Takes on hardest problems
  - Sincere modelers (may be too sincere)
  - Interesting problems (nobody recognizes these are very hard)
- Mismatch in language names to AI
- Basic interface problems (lack thereof, bugs, maturity of some tools)
- Lack of example models
- Lack of tool creation, maintenance, and cumulation (perhaps due to changes)
- Changes every year or two (not fair impression)
- Loaded for bear software (C, unix, sockets)

(not discussed in meeting, but thought of during workshop)

Possible small-ish fixes

- soarceForge
- FAQ (email yearly)
- Mailing list

Possible larger fixes

- Support new users
  - Fix demos that fail to run in Soar 8
  - Help resolving download/install issues
    - Forum on sourceforge
    - Installer FAQ
  - Support for installing to non-default locations
- Better documentation
  - Really good, interactive tutorial
  - Manual with real index
  - BNF grammer for Soar rules (find it!)
  - Explain debugging process
  - Lack of connectivity in what is available

Possible larger fixes 2

- Web site
- IDE
- Tutorials and teaching materials
  - Deeper for Soar, deeper PST is only one day, 1 real model
  - For the tools
  - Mid-level tutorial (e.g., book, *inside Soar understanding, OUP)*
- Higher level languages
- Model libraries (NL-Soar)
- Increase motivation (publications, impacts, and specifically for psyc folks)
- Better access to tools AND models
  - What versions of soar are available
    - And what versions of TCL are required
  - Sharing of models w/ links to required soar version for the model (soar 5 on web please)
  - Sharing of tools w/ links to required version for the tool