



**Simulation Interoperability
Standards Organization**

"Simulation Interoperability & Reuse through Standards"

Military Writing in Simulations and Operations: Establishing Metrics and Standards

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Theses of Paper

A major thesis of this paper is that, given that communication skills are a primary requisite for military success, scant attention is paid to both training and evaluation of that skill.

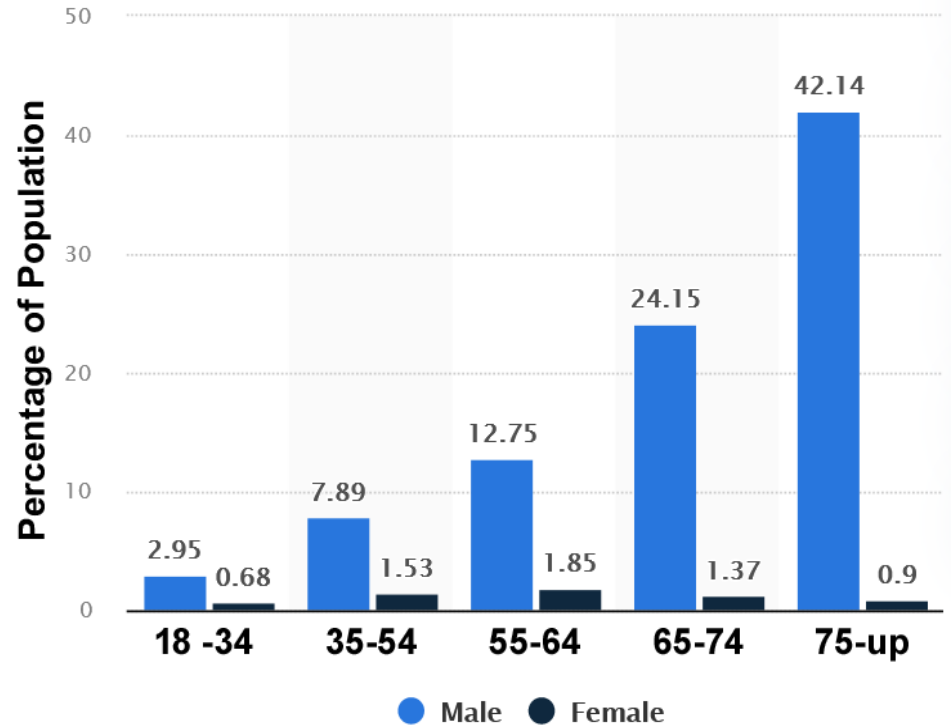
Another is that the Modeling and Simulation community may not have sufficiently focused on this vital ability.

A third derivative thesis is that much of this hesitancy can be ascribed to the lack of identification, qualification, quantification and instantiation of both figures of merit and levels of mastery.



Why communicate

- Coordination of groups require an effective mode for passing information up and down
- Failures to do so can result in catastrophic losses
- Poor writing skills will injure career progression
- A general lack of communication to the public will result in failure of support therefrom





What happens when “comms” fail?

- **Public unaware of what it means to serve in the military**
- **Only the very junior ranks (E-1 to E3?) are spared the need to write much**
- **Much depends on how well information is communicated**
 - Mission success
 - Combat losses
 - Operational effectiveness
 - Career progression
- **Many simulations do not include, let alone evaluate communications from live participants**



Don't new personnel know how to write and speak?

- **The perception in the military, higher education and industry is that new accessions were already taught to write and speak with**
 - Conciseness
 - Cogency
 - Compelling force
- **All of the communities mentioned have found that this is not true**
- **Anecdotally, it seems all have fallen prey to that vision from the Wizard of Oz that a piece of paper makes the Scarecrow intelligent**
 - FitRep input inept
 - CalState Officer issues
 - CEO of computer company



How much Writing Time do Professionals Spend

As much as the public overestimates the losses in combat, they underestimate the time spent writing. This informal survey of a variety of fields found that professionals spent about 63% of their time writing or preparing to speak.

Profession	Degree	Writing	Speaking	Total		Profession	Degree	Writing	Speaking	Total
Navy LTJG Sub Surface	BS	15%	10%	25%		Research Manager	PhD	60%	10%	70%
Research Group Leader	PhD	15%	15%	30%		CDR Navy Cryptologist	BA	50%	20%	70%
Retired	PhD	30%	5%	35%		Research Project Mgr	JD	60%	10%	70%
Industry Programmer	PhD	20%	20%	40%		CPO Navy Instructor	BA	20%	50%	70%
Coder	MS	35%	10%	45%		Coder	AA	60%	20%	80%
Captain Coast Guard	DDS	25%	20%	45%		College Instructor	PhD	40%	40%	80%
Coder	BS	40%	10%	50%		Army Major - Colonel	PhD	60%	20%	80%
Army Lt - Captain (Infantry)	BS	40%	10%	50%		Researcher	PhD	70%	10%	80%
Recovery Room RN	BSN	35%	25%	60%		Air Force Colonel Missiles	JD	60%	20%	80%
Navy Electrician CPO	BA	40%	20%	60%		CPO Navy Linguist	BA	65%	15%	80%
Capt Marine Artillery	MA	35%	25%	60%		Tech Instructor	BS	10%	75%	85%
Industry Manager	PhD	30%	40%	70%		Consultant/Manager	PhD	80%	10%	90%
						Means		42%	21%	63%



Training time for communications

- The issue is establishing the best way to find out if communications work
- There seem to be very few ways of getting good data (lack of standards?)
- When considering these issues, easy to feel it is all just too subjective
- Nevertheless, it seems to be misperceived at every level that previous training has provided the person with the correct foundation
- University of Chicago writing expert says they ALL fail
- Training time does not adequately match the importance of tasks
- High School (English largely literature) College (one course) Military (little)
- Then the question arises: “Well, what do senior NCO’s & officer write?”



What do Military Personnel Write About?

Sorted alphabetically

After Action Reviews	Five paragraph orders	Officer Performance Reports
Award citations	Formal proclamations	Operations manuals
Battle orders	Equipment maintenance reports	Procurement orders
Classroom lectures	Intelligence Reports	Staff advisory reports
Correspondence	Letters to unit KIA's families	Standing orders
Ceremonial plans	Lesson plans/lectures	Technical manual revisions
Enlisted Evaluations	Movement orders	Training Plans
Fitness Reports	Officer Evaluation Reports	... ???



What Can Technology Do?

- **Major obstacle: no way to meaningfully assess communication skills**
 - Too varied!
 - No consensus on figure of merit!
 - Too many different contexts to assess an over-all skills!
- **Hard to promise a “new way”, but there are some glimmers of hope**
- **Can now evaluate innumerable criteria extracted from massive data**
 - Isolate correlations between style and success
 - Quantify number of features presented by individual
 - Evaluate impact of improvement mechanism and deploy automatically
- **New hardware to more effectively implement data analyses**



Emerging Technologies e.g. Quantum Computing

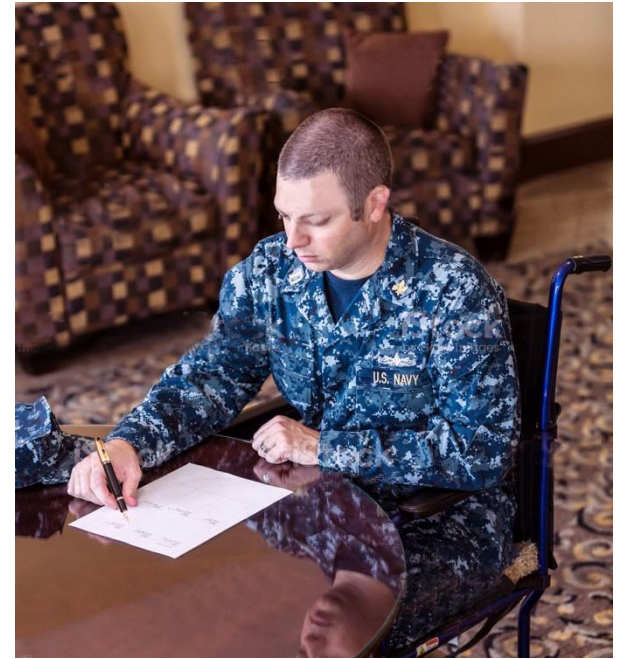
- **Several major new approaches**
 - Neural Net Training
 - Big Data Analyses
 - Deep Learning Insights
- **Can deliver what humans can't**
- **Quantum computing is stochastic**
- **Free from human frailties**
- **Automatically probe progress**
 - Photo Credits
 - *D-Wave*
 - *IBM*
 - *Honeywell*





What could the future offer?

- Writing is not a trivial task
- Training may not have prepared individual
- Collating existing written and spoken passages now can be executed, monitored and graded
- Progress then compared to FitRep/OER rating
- Remedial refreshers recommended
- One could choose to make results part of the official record or to keep confidential
- Coaching from virtual conversational mentor



**Young Navy Civil Engineer:
Drafting a document**



Conclusions

- **Writing and presenting are two of the most critical skills for military personnel**
- **Current procedures are constrained by a lack of standards, elevated ops schedules and dwindling staffs**
- **Current training does not provide sufficient assistance**
- **Techniques are available that might enable significant progress using emerging technical capabilities**
- **The M&S Standards community has a position to champion this issue**



The authors wish to thank all of their M&S and Standards colleagues; without them we could not have contributed as well as we did. We should also note that much of the work cited was supported by grants from the Office of Naval Research's STEM Program (ONR N00014-16-1-2820) (Slide based on "Blank") and by research assistants supported by the National Science Foundation Research Experience for Undergraduates program (NSF 1560426). Nevertheless, the positions taken in the paper are the authors' own and do not represent in any way the views of the Department of Defense or the US Government.



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Q&A / Discussion