Towards Super-Human Decision Making: A Framework for Decision Support Delivery

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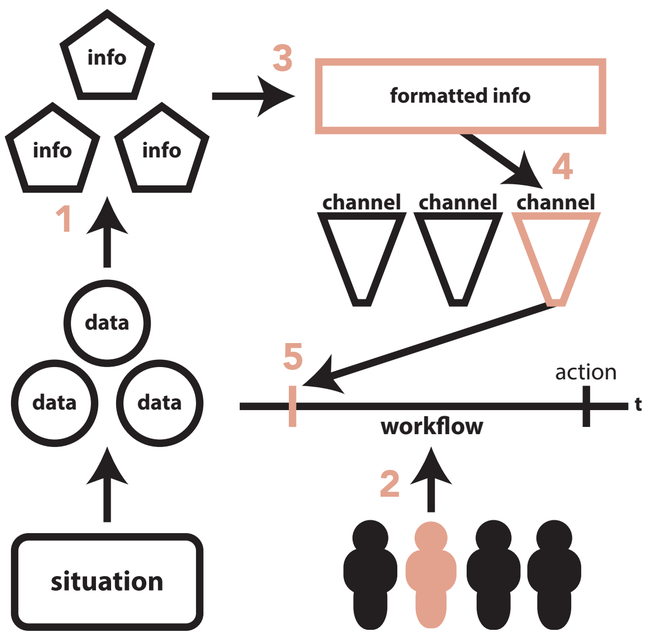
VISION

Background: 5 Rights of Decision Support



A decision support system should get:

1. the right **information**
2. to the right **person**
3. in the right **format**
4. through the right **channel**
5. at the right **point in workflow**

Previous Work

Right #1: extracting actionable information[3]
Right #2: pre-defined mapping (operator to system)[2]
Rights #3-5 (Decision Support Delivery): specialized approaches in healthcare[5], aviation[4], military[1], etc.

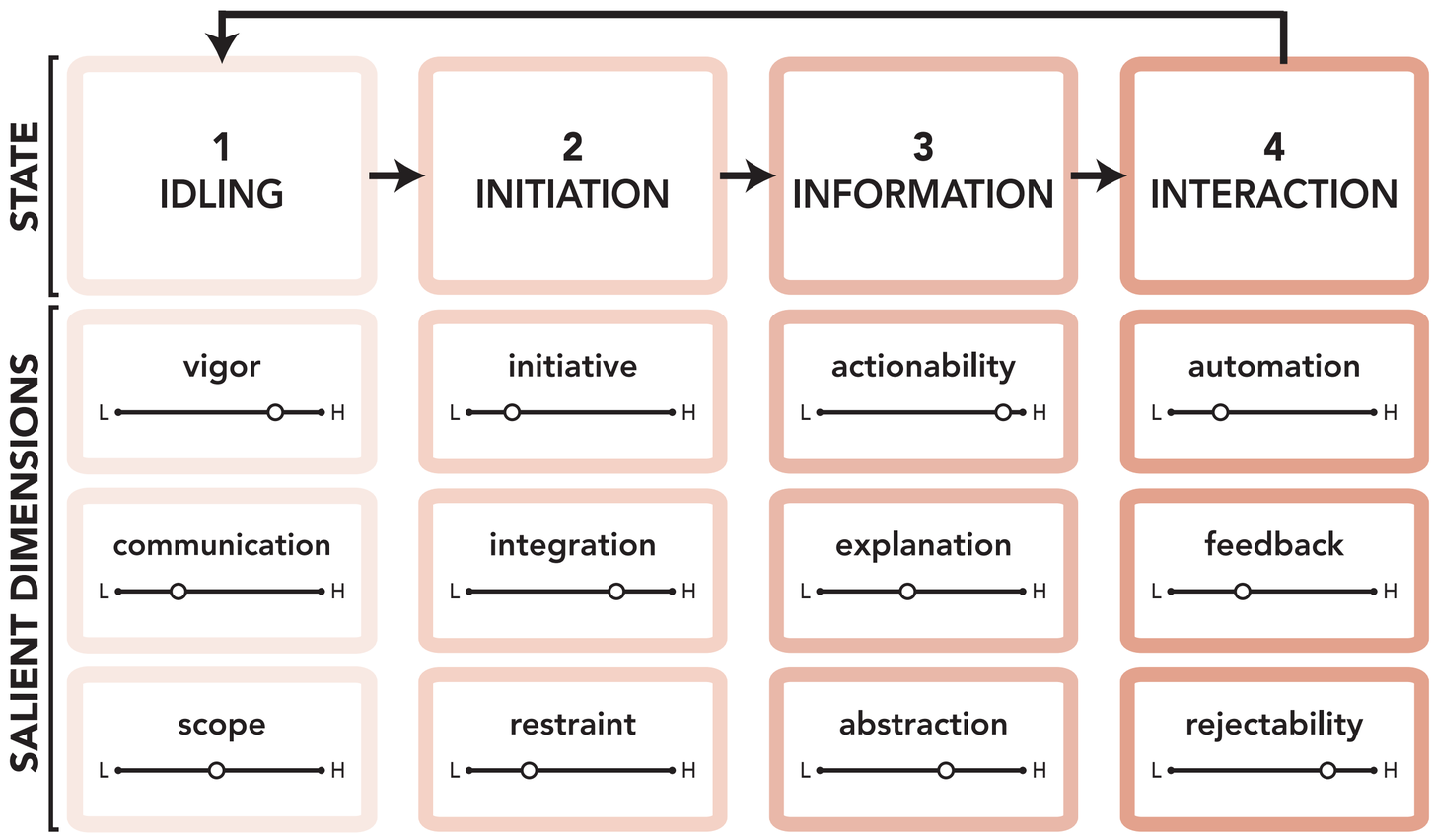
Research Question & Proposed Solution

Q: How can we unify the findings into a domain agnostic framework to better meet the last three Rights of Decision Support?

A: By identifying the key design dimensions in the state cycle of a decision support delivery event.

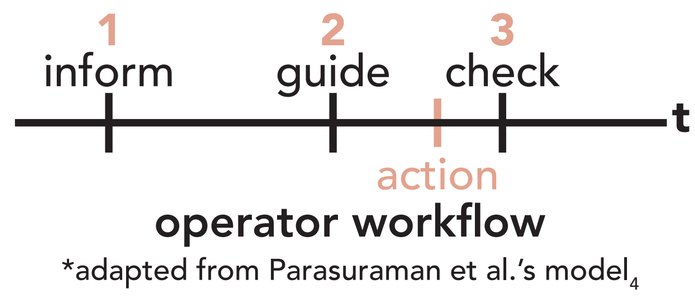
STEPS

Step 1: Design Framework for Decision Support Delivery



Step 2: Support Taxonomy

THREE categories of support*:



operator workflow

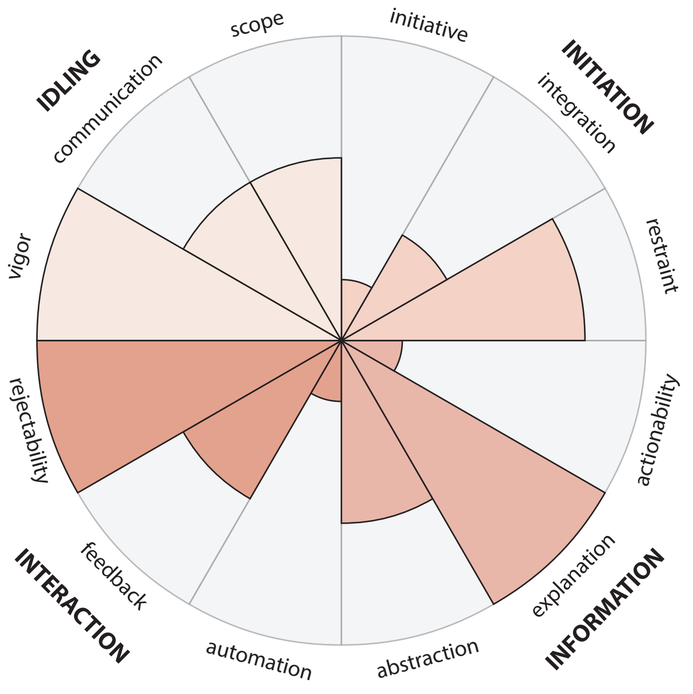
*adapted from Parasuraman et al.'s model[4]

Step 3: Quantification

Experimental process:

1. Create design templates
2. Implement DSS's
3. Determine exemplar for each category of support

Sample template:



NEWS

Step: 1☑ 2☑ 3☐

Current Work:
Journal paper to present design framework

Up Next:
Labor & Deliery Simulation DSS Experiments

CONTRIBUTIONS

This work contributes to the field by:

1. Unifying the disjoint findings on DSS design from various domains
2. Providing a framework for discourse in troubleshooting and improving DSS's
3. Working to bridge the gap between intelligent systems and human operators

Key References

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2. Klann, J. G., Szolovits, P., Downs, S. M., & Schadow, G. (2014). Decision support from local data: creating adaptive order menus from past clinician behavior. Journal of biomedical informatics, 48, 84-93.
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4. Parasuraman, R., Sheridan, T. B., & Wickens, C. D. (2000). A model for types and levels of human interaction with automation. Systems, Man and Cybernetics, Part A: Systems and Humans, IEEE Transactions on, 30(3), 286-297.
5. Van Der Sijs, H., Aarts, J., Vulto, A., & Berg, M. (2006). Overriding of drug safety alerts in computerized physician order entry. Journal of the American Medical Informatics Association, 13(2), 138-147.

Acknowledgements

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