



# IESS 2.4

**MUNI** Masaryk University  
**FI** Faculty of Informatics

## Empowering Service Systems through Intelligence Augmentation (IA) in Digital Society

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**14th International Conference on Exploring Service Science (IESS 2.4)**

*Service Science to promote intelligence augmentation*

February 7-9, 2024, Brno, Czech Republic

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## Preliminary reflections

This is the era of cognition as a service: *machines learn and help humans make smarter decisions to obtain better outcomes.*



The integration between people, technology, organizations and information as a necessary condition to co-create both social and economic value in a service system

*(Maglio, Kieliszewski and Spohrer, 2010)*

## Issue under study

“Intelligent” service systems, based on AI, transform into *“wise” systems when components cooperate with technological resources*. This interaction, rather than amplifying human capabilities, leads to cognitive enhancement, streamlining decision-making

*Does AI facilitates the transition of the business system from an intelligent to a wise configuration, integrating the rational component of AI with the emotional aspect of human intelligence? .*



## Service Science-based view

*New rules* should be implemented to create synergic and collaborative process among *consonant roles and resonance interactions to design a smarter but even wiser system*, composed by an integrated relationship between human and machine  
(Spoher et al. 2014; 2017).

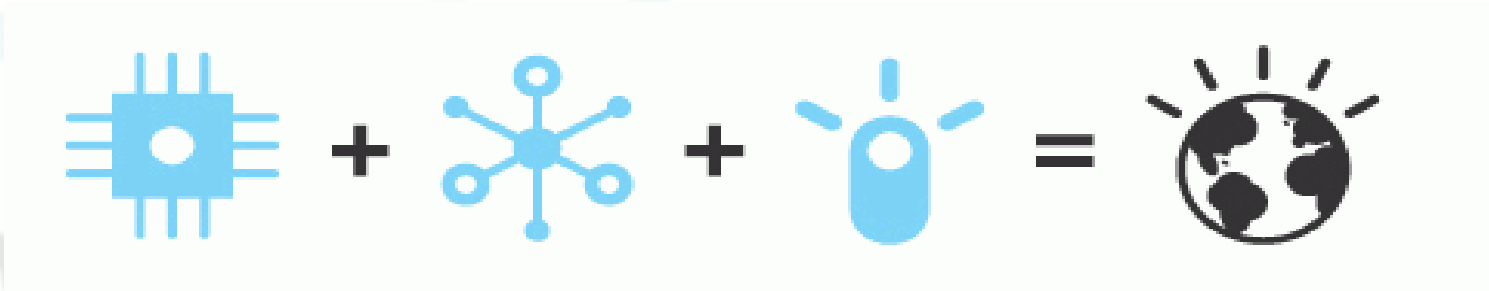


*Smart Service System* defines the potential capacity of a system to survive and create value  
(*potential consonance/Efficiency = power to do*)



*Wiser Service System* defines the ability to determine the best possible solution for the wider and common good  
(*resonance effect/Effectiveness of doing*)

## Working Together to Build a Wiser Planet



### INSTRUMENTED

We now can measure, sense and see the exact condition of practically everything

### INTERCONNECTED

People, systems and objects can communicate and interact with each other in entirely new ways

### SMART

We can respond to changes quickly and accurately, and get better results by predicting and optimizing for future events

### WISE

Smart People interact improving collaborative intelligence through the application of the AI into the problem-solving processes

*T-shaped knowledge/*

*T-shaped People*

Source: Our Adaptation from Dr. James ("Jim") C. Spohrer  
 ICSOC (Service-Oriented Computing) San Francisco, December 8, 2010

## The value contribution of Intelligence Augmentation (IA) in complex scenario



- ✓ Knowledge-amplifying processes induced by AI are more consistent with the concept of Intelligence Augmentation (IA): *a resonance effect is emerging* in the interaction between human intelligence (*rational and emotional*) and machine intelligence (*rational and computational*)
- ✓ Transitioning *from Artificial Intelligence (AI) to Intelligence Augmentation (IA)* means, recognizing *a shift from intelligent systems to wise systems*. In this context, the “composition” between artificial intelligence and human cognitive structure results in a productive and problem-solving enrichment .

# The value contribution of Intelligence Augmentation (IA) in complex scenario



Intelligence Augmentation (IA) *does not refer to a process of mere problem resolution but rather to a better contextualization of the problem.*

Intelligence emerges in the qualification phase of a problem, and in a sense, it allows for addressing relevant questions such as:

- ✓ Why resort to IA?
- ✓ What is its contribution to problem identification?
- ✓ How useful is it in managing problems more effectively?





## The value contribution of Intelligence Augmentation (IA) in complex scenario



- ✓ Technology *is becoming relevant* because of a constant consonant-based process.
- ✓ In social contexts, the “sensitivity” of new generations to technologies stimulates *a quick integration* in consciousness and operational autonomy.
- ✓ Technology, especially through AI, increasingly becomes indispensable, *decisions in complex contexts are more influenced by algorithms than the technological substrate*.
- ✓ IA, while enhancing human cognitive processes, elevates the relevance of the technological supra-system from an influential resource to a critical one.





## The value contribution of Intelligence Augmentation (IA) in complex scenario



Understanding IA and its implications in complex decision-making processes is just the beginning of a vast field of inquiry

### *Positive Future Scenarios:*

- ✓ *Enhancement of Human Abilities*
- ✓ *Deeper Human-Machine Collaboration*
- ✓ *Development of Creative Solutions*

### *Negative Future Scenarios:*

- ✓ *Digital Inequalities*
- ✓ *Dependency and Loss of Skills*
- ✓ *Privacy and Security Risks*
- ✓ *Job Loss*

## Conclusions, implications, and future directions for the research



- ✓ *The redefined concept of IA*, characterized as collaborative and integrated intelligence, propels the business system *from mere intelligence to wisdom*.

This evolution implies emotional component unique to human intelligence, seamlessly integrated with the rational component governed by AI.



- ✓ This notion aligns with an *ethics-centered and human-focused approach to the evolution of Artificial Intelligence (AI)*.

## Conclusions, implications, and future directions for the research

✓ *Centrality of the Human Decision-Maker*

✓ *Increased Criticality of Technology*



✓ *Continuous Optimization of Computational Models*

✓ *Ethical and Sustainable Approach*





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*Thank you for your attention,  
comments, questions, and  
suggestions*

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