



Business Communication Skills in International
AI-Based Solutions. Brief Remarks on a Holistic
Approach for Modelling, Designing and
Encapsulating the Above-Mentioned Crosscutting
Concerns (Aspects).

Agata Majchrowska and Robert Majchrowski

EasyChair preprints are intended for rapid
dissemination of research results and are
integrated with the rest of EasyChair.

March 24, 2023

▶ Business Communication Skills

in International AI-based solutions



Business Communication Skills in international AI-based solutions

Brief remarks on a holistic approach for modeling, designing and encapsulating the crosscutting concerns and following aspects

Majchrowska, A., Majchrowski, R.

[Post-conference paper: ENDORSE 2023. The European Data Conference on Reference Data and Semantics. 14-16 march 2023]

Abstract

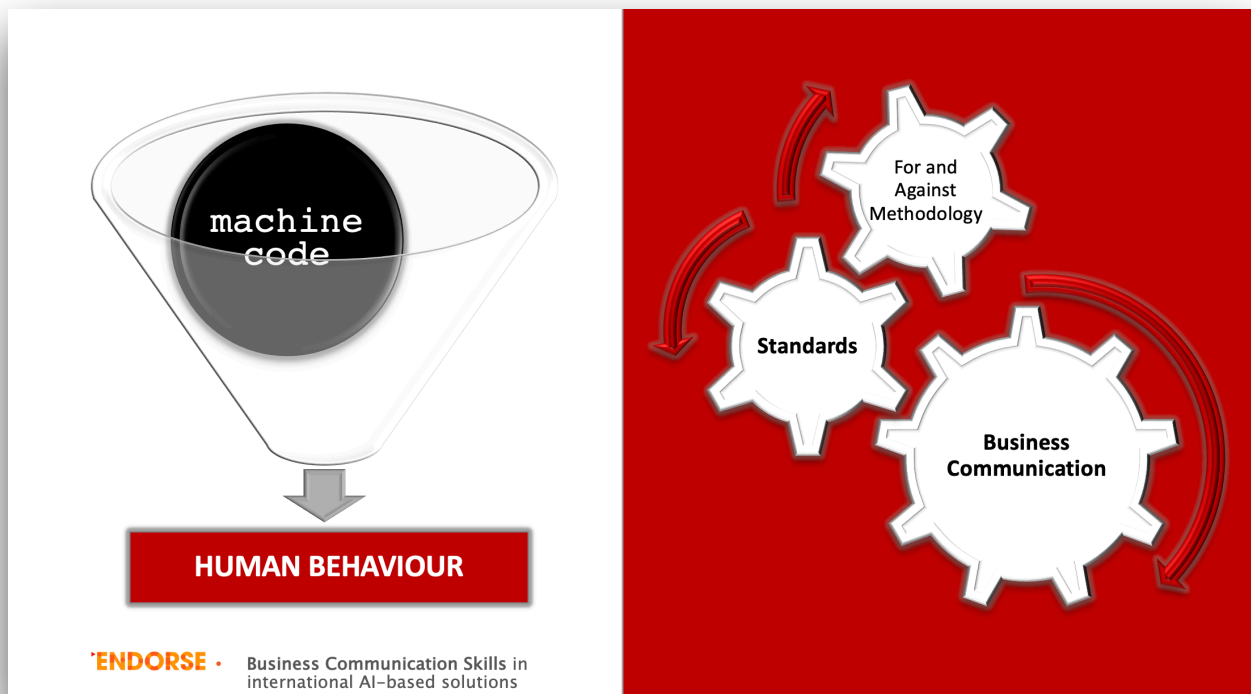
This post-conference paper summarizes the initial findings of the research on Business Communication Skills in international AI-based solutions. It examines the need for a holistic approach for modeling, designing, and encapsulating cross-cutting concerns of the use of AI-based solutions. It highlights the importance of extending research studies on communication and social interaction skills, informing and explaining skills, and communication skills for group decision-making. Moreover it examines the need to find and implement the most appropriate solutions directly to improve access to publicly available information.

It also discusses the complexity of the research problem and how to adapt machine code to result in human-like behavior. Finally, it discusses establishing standards based on the use of for and against methodologies. The vital grounds of this research are the four main groups of spaces of concern: Natural Language Processing, Sentiments and Emotion Mining, Visual-Gestural Communication, and Signs and Symbols. The main research examines how Multimodal Models, Competitive Intelligence, Metaphor and Business Communication coexist and correlate in practice. It takes into account factors such as English across culture communication, across culture studies, and the problem of mapping cultural differences. The research study is inspired by international academic studies that attempt to extend the existing findings. It is important to note that the "word-for-word" concept that was initially present within Natural Language Processing has already been replaced by the "sense-for-sense" approach due to the methodology used in the general field of regular translation. Additionally, it shows that information designers must master all their skills and talents to combine them with the rigor and problem-solving ability of a scientist or mathematician and bring the curiosity, research skills, and doggedness of a scholar to their work.

In the age of Generative AI and Generative Imagery, it is necessary to do more in-depth research to reveal its findings. The success of search engines and content generators is a testament to the popularity of informative and explanatory communication and business decision-making, as poor informative and explanatory skills are costly. Therefore, the importance, prevalence, and satisfaction of good informative and explanatory communication are highlighted by comprehensive research.

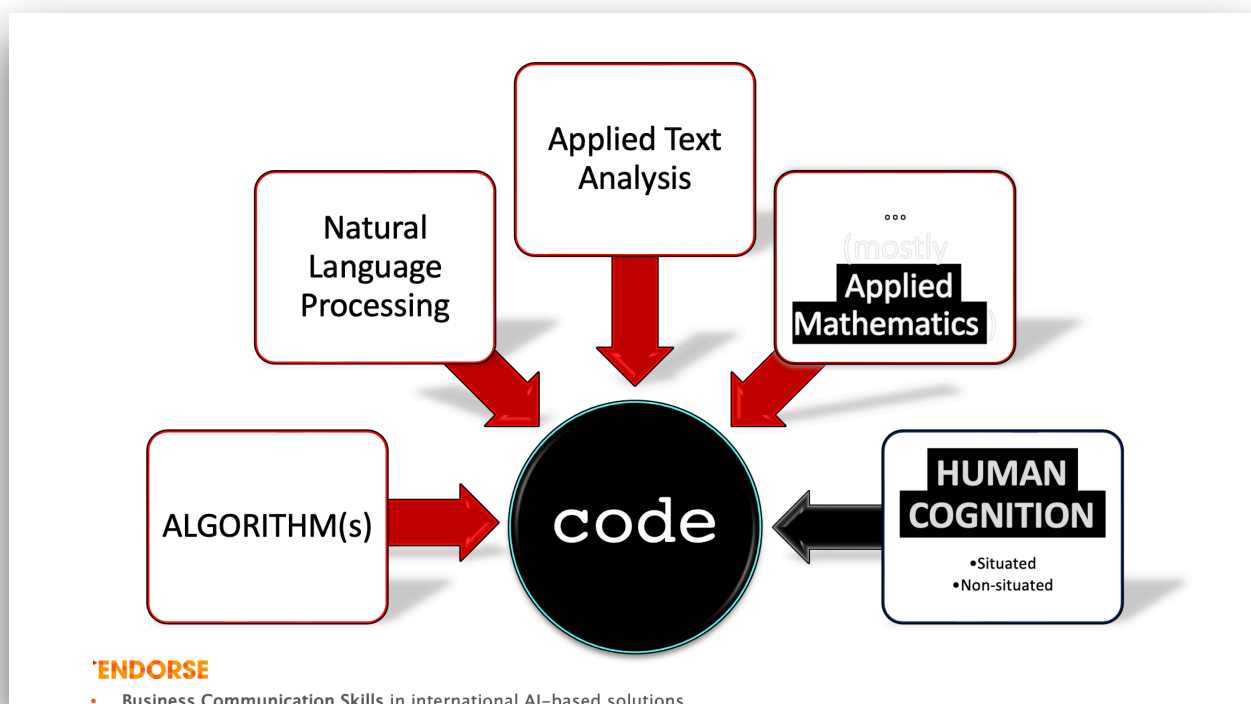
Future Multimodal Orchestration requires Standardized Procurement to implement the questions and answers in effective Business Communication. Authors propose the concept that images are multi-purposeful and can be used multi-purposely, i.e., to describe metadata, make the order within datasets, and create the data itself. This theoretical concept that is presented as the initial findings at this stage of the research study, may, however be essential for system and application architecture, engineering, designing and implementing operating models, and the reuse of data based on data literacy skills.

Contemporary regard for the speedy development of the solutions that require communication skills more or less inevitably provides reasons and opportunities to deliver some brief remarks on a holistic approach for modeling, designing, and encapsulating those cross-cutting concerns. The aspects of extending the research studies on communication and social interaction skills, informing and explaining skills, and communication skills for group decision-making, among others, play an essential role in the research that seeks the most appropriate patterns that could apply to most current needs in the use of AI-based solutions. They would include Generative AI, internationally.



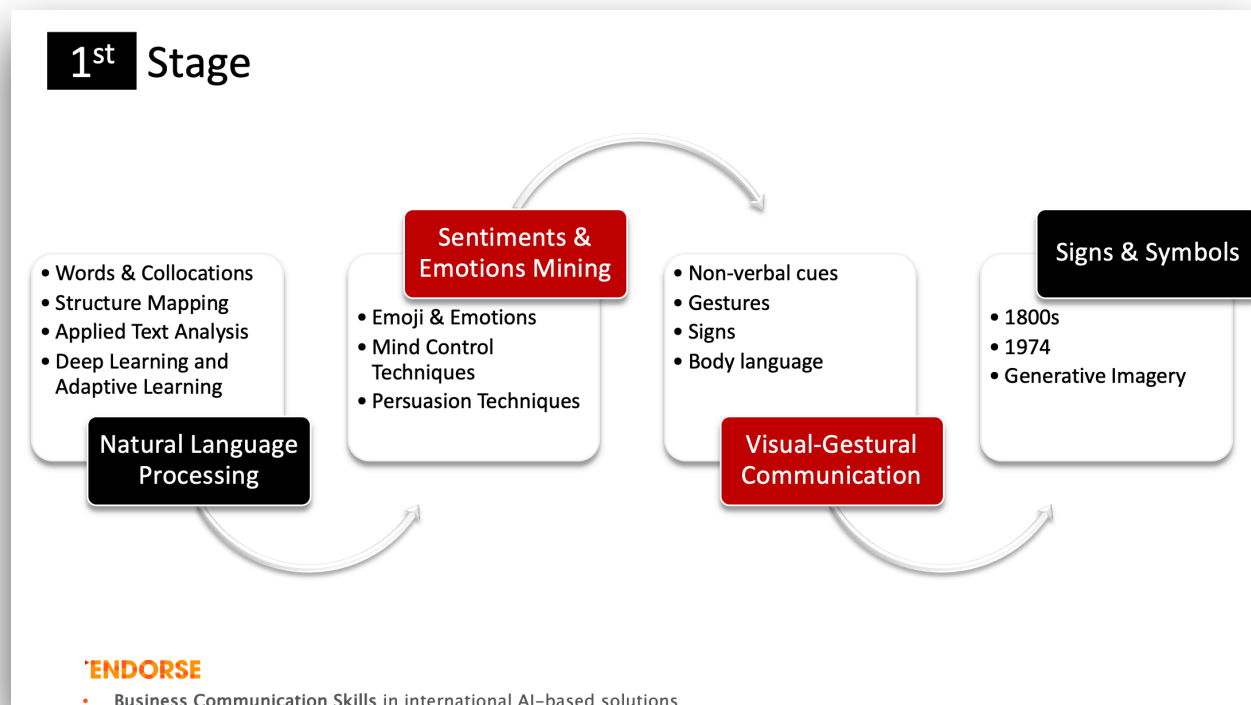
The entire research study goes broader and deeper than those initial findings, as presented here. Many of us know the background for sector-specific solutions and cultural differentiation. However, while using multilingual references, one may wish to find and implement the most appropriate solution directly to improve access to publicly available information, among other reasons. Consequently, one would definitely like to avoid future multi-version updates for a particular system. What should one know about communication skills? How does this behavioral factor enhance solutions and interfaces? Which organizational attributes and organizational factors play an essential role in developing searchable open data and knowledge-sharing databases? The entirely holistic approach may be designed on the basis of research studies on communication, software development, AI-related rules, regulations, and best practices that both software engineers and solution architects should probably know.

The importance of the idea of how to adapt machine code to result in human behavior should be discussed first. To answer the question of the complexity of this research problem, one may consider the relatively beneficial outcomes that come from the area of business communication. Then, some remarks underpin the discussion over establishing standards based on the use of for and against methodologies.

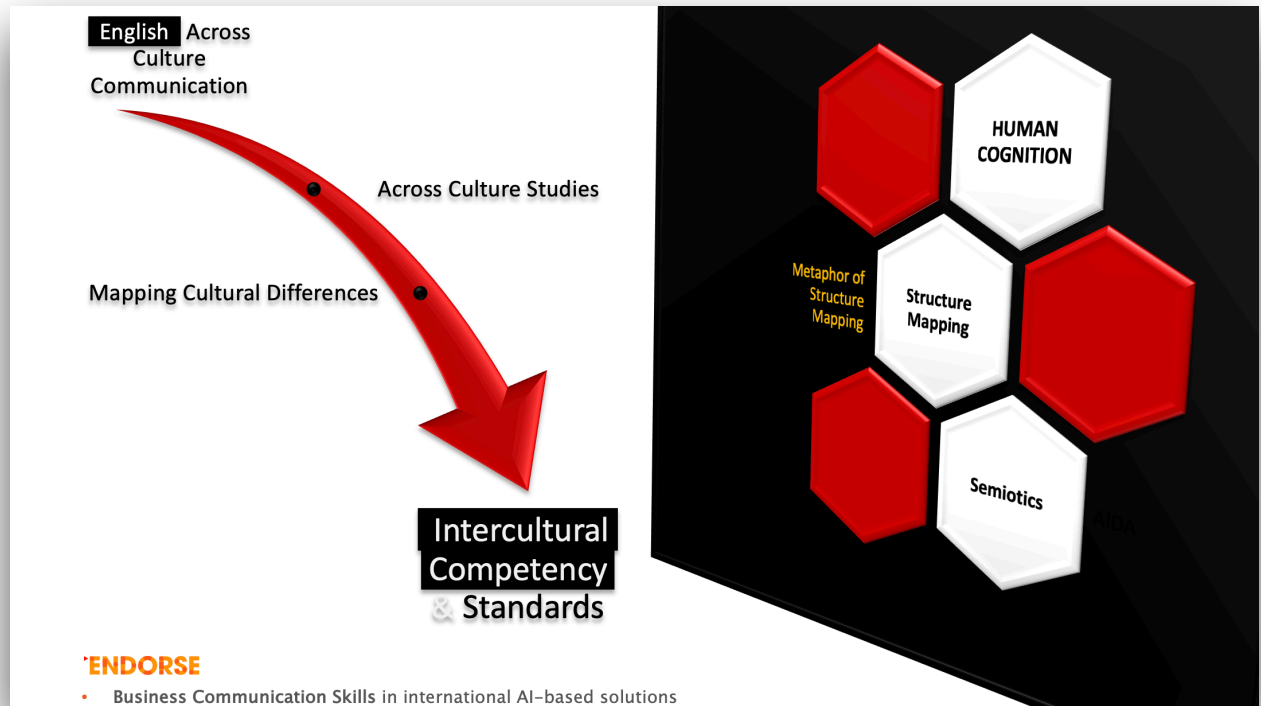


As for now, one links the code with algorithms, Natural Language Processing, Applied Text Analysis, and Applied Mathematics (mostly). What seems to be missing is human cognition, both situated and non-situated. Some scientists aimed to get the findings as the result of their attempt to design one clear link between the machine code and patterns of human behavior, which for the moment seems to be regarded as challenging. As the final findings show, “in order to consider such an idea as “overcoming” situated cognition, it is important to appreciate that, no matter how deeply enmeshed in culture human cognition may have become, the situatedness has a biological basis (...) A tag-playing robot would need a different kind of mind from the one

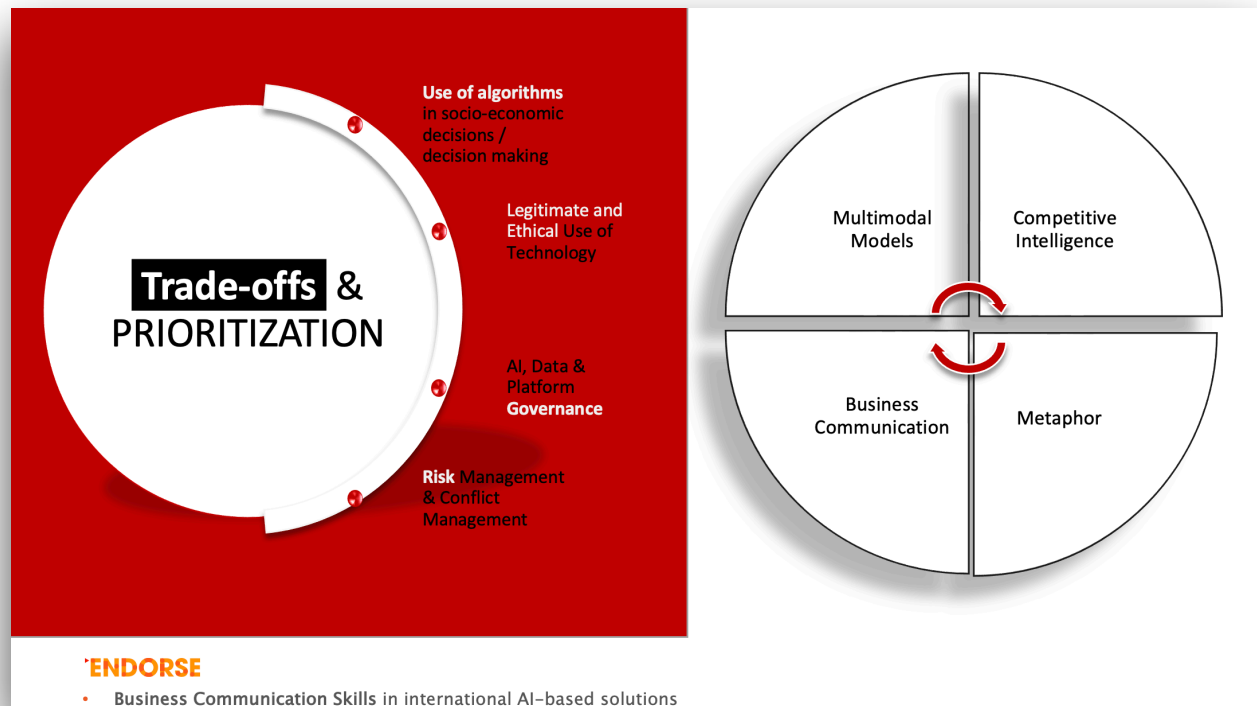
rule-based AI would give it. Instead of the mind that works on internal representations of the playground and the participants, it would need a mind more directly attuned to the physical and social environment, responding quickly to opportunities to tagging, switching from one pursuit to another, the instant that a more promising target presented itself. In short, it would need situated condition”. To summarize this approach, the findings lead to the conclusion that people should be aware of the necessity of mastering the practices of non-situated cognition and the ways to deal with it. (Bereiter 1997)



Consequently, one should recall the first stage of the discourse that one can recognize in contemporary times; four main groups of spaces of concern that can be established: (1) Natural Language Processing; (2) Sentiments and Emotion Mining; (3) Visual-Gestural Communication; and, broadly speaking, (4) signs and symbols. The mapping of those groups over subgroups should go as follows: (1) Words & Collocations; Structure Mapping; Applied Text Analysis; Deep Learning and Adaptive Learning; (2) Emoji & Emotions; Mind Control Techniques; Persuasion Techniques; (3) Non-verbal cues; Gestures; Signs; Body Language; (4) Some remarks that have been investigated since the 1800s on signs and symbols that come from American philosopher Charles Sanders-Pierce along with his works on linguistics and the instance of establishing the unified set of symbols used for transportation (AIDA, American Institute of Graphic Artists; Department of Transportation, 1974); both of them, among others, to consider the remarks delivered by Marty Neumeier on the seven layers of depth of meaning in visual communication (i.e., perception, sensation, emotion, intellect, identification, reverberation, and spirituality). Then one may, and perhaps even should, consider the substantial role of Generative Imagery, which is already present.



When one starts the attempts to define the problem, framed by some inevitable trade-offs and prioritization, one may discover how the Multimodal Models, Competitive Intelligence, Metaphor and Business Communication coexist and correlate in practice.



To provide an example, in the regular research on Intercultural Competency and Standards, one takes into consideration factors such as English language across culture communication, across culture studies, and the problem of mapping cultural differences, among other factors, that denote the way of understanding the case considered from the perspective of human cognition, structure mapping (including the metaphor of structure mapping), to close the bracket with the area of semiotics itself.

Literally, one should go through the subject by recognizing the road map. Some findings arise while following the given steps and their impact, which come from rhetoric, reasoning, exploiting content, translation, and finally, the metaphor.



Naturally, in the age of Generative AI and Generative Imagery, the question of doing more in-depth research to reveal its findings sounds more than just a pure curiosity; it may seem to be, in fact, a necessity. Currently, the “word-for-word” concept that was initially present within NLP has already been replaced by the “sense-for-sense” approach due to the methodology that is used in the field of regular translation in general. Moreover, it is hard to deny that “information designers are very special people who must master all their skills and talents of the designer, combine them with the rigor and problem-solving ability of a scientist or mathematician, and bring the curiosity, research skills, and doggedness of a scholar to their work,” as observed by Terry Irwin.

This ongoing research study may be found to be one inspired by the various international academic studies that attempt to extend the existing findings. However, it is still worth highlighting that some of the papers that were previously addressed to scholars may be highly beneficial. Consequently, some of the essential findings were intentionally selected from all the material that underlies the entire research study exclusively for the specific purpose of this paper.

The success of search engines and content generators (i.e. Generative AI) is testimony to the popularity of informative and explanatory communication as well as business decision-making.

The essential details in the ongoing discussions are that decision-making is an important activity for individuals and groups and that the likelihood of choosing appropriately depends on a number of skills. These skills can be genetic in origin or acquired and vary as a function of neurological, physical, and societal factors. The types of situations decision makers confront and to which their choices apply range in the amount of cognitive effort, number and sort of skills, and the degree of deliberation required to produce desired outcomes. Even if the final decision in the given case had to be reached by a group, such as a monitoring authority, the task would reduce vastly to a determination of whether the situation in question had violated or followed an explicitly formulated and stated policy. and, hence, whether the indicated penalty is thereby warranted. Making a decision can involve substantial cognitive effort, an array of associated skills, and active deliberation. For example, when trying to generate a solution to a problem that satisfies a variety of specific criteria, decision-makers need to be skilled in recognizing and articulating the problem, matter or issue, reasoning, creativity, argument, maintaining an environment that is conducive to effective deliberation, managing conflicts, and the like. Communication skills are particularly important, as the quality of decisions is a function of the amount and quality of the discussion. To be optimally prepared to function effectively, one needs to possess, or acquire, and develop a broad repertoire of pertinent skills. This seems to be a major purpose of further research studies. (Gouran, 2003, 2008, as well as Hirokava and Pace 1983, Mitchell and Each 1977, Minski 1968, Murrell 1977, Bentley, 1998, Bazerman 1998, Newman & Newman, 1969, Nisbett & Ross, 1980, among others, as accordingly mentioned by Gouran's paper 2003, 2008).

Poor informative and explanatory skills are costly, as demonstrated i.e., by the failure to communicate the difference between pounds and newtons in 1999 within the NASA project. This error caused the Mars Climate Orbiter mission to fly too close to the planet's surface and disintegrate in the Martian atmosphere. To provide the other example, good informing and explaining in medical contexts are linked to increased use of recommended screening procedures for cancer and other diseases. In classrooms, explanatory textbook passages lacking these features are less likely to increase learning. Additionally, informative and explanatory communication is ubiquitous throughout Web sites, newspapers, popular science magazines, television documentaries, "infomercials", cooking shows, and many other mass media communication. Poor informative and explanatory communication skills have been linked to military disasters, transfusing patients with the wrong blood type, and deadly delays in responding to emergency calls. In the workplace, poor communication skills lead to frustration between shift employees, lost revenue, and misunderstood employee benefit provisions. Additionally, new communication technologies, such as the Internet, have not led to uniformly excellent communication efforts. A study published in the Journal of the American Medical Association showed that nearly 100 million U.S. citizens use the Internet to find health information, and 70% say the information they find influences their health decisions. However, physicians were not pleased with the informative and explanatory messages patients were getting from the Internet. Rowan's research summarizes and extends past efforts by the author(s) to develop research-supported theories of discursive forms. It explains why common notions of informing and explaining sometimes hinder, rather than help, communicators and defines the

importance, prevalence, and satisfaction of good informative and explanatory communication. It also highlights the high costs of poor informing and explaining, as well as the news that informative communication among (medical) professionals often goes awry. (Rowan, 2003, 2008, and e.g. Gentler, 1988; Gillbert & Osborne, 1980; Loman & Mayer, 1983; Mautone & Mayer, 2001; Mayer, 1983, 1989, 1992; Mayer & Anderson, 1992; Mayer, Bove, Bryman, Mars & Tapngco, 1996; McDaniel & Donnelly, 1996; Rukavina & Daneman, 1996, Yule 1997, Kineavy 1974, as already cited in the Rowan’s paper).

**“Word-
For-
Word”**

“Sense-For-Sense”

ENDORSE
• Business Communication Skills in international AI-based solutions

As for our very initial assumptions, some holistically regarded findings may be applied to the operating model of digital communication, including Generative AI. The one is definitely the decision maker. Conversely, the other, is likely closer skilled to a 4-to-5-year-old in terms of behavioral understanding of the contextual background and complex communication aspects. As the previous research on the extended reuse of communication skills in fact revealed, one should ask the preliminary question of whether one should indeed go as deep as to replace the common interactivity between machine-code’s user interface and the user by using pictures that stand understandable as something “worth more than thousands of words?” The authors believe so, especially when one takes into consideration the most recent research study on the way the brain operates depending on the language of origin (Andawer, 2023) and the way that we teach the young at the primary stage. To recall Andawer’s research findings published within Neuroscience, “brain connectivity is modulated by learning and the environment during childhood, which influences processing and cognitive reasoning in the adult brain. Our study provides new insights how the brain adapts to cognitive demands, that is, the structural language connectome is shaped by the mother tongue”, which is, with no further doubts, the methodology of how knowledge is gathered at the initial stages by using... pictures of various kind.

To provide just a few practical examples for the purpose of this paper, while discussing the imagery, spatial imagery extensions (including metaverse concept as well as twin digital cities, visual modelling and testing the scenarios or providing simulation of any kind), one discovers that visual representation of information works effectively. To reflect on the approach within our research, initial assumptions and findings that provide the conceptual, theoretical model are in fact already successfully adopted. One should admit the implementation is slightly distinct by the other means or aims in particular, i.e., within the operating system's user interface, like Windows, Mac, MacOS, or Android, that offers simplified imagery to support the user. Still, the entire back-end information is decrypted, pretty obviously, differently for the purpose of the machine code (to recall the Unicode, as the perfect example). When this approach combines with the input of the data that the additional visual representation delivered by the user may support, as indicated, based on one's reasoning, one goes more or less towards extending the reuse of the concept of putting the data into the semantic order, that is already provided elsewhere. To recall the Facebook or LinkedIn Emoji, that unleashes in practice the pattern of mapping or tagging the data, but in this case - on the basis of the emotions that go behind the words instead of another type of categorization, that is, in fact freely open and available for 'mapping-for-the-purpose' tool. There is only one element that is missing - the reusable and well-recognizable symbol, sign, icon or drawing that should be delivered externally or individually, depending on the level of the drawing skills of the user.

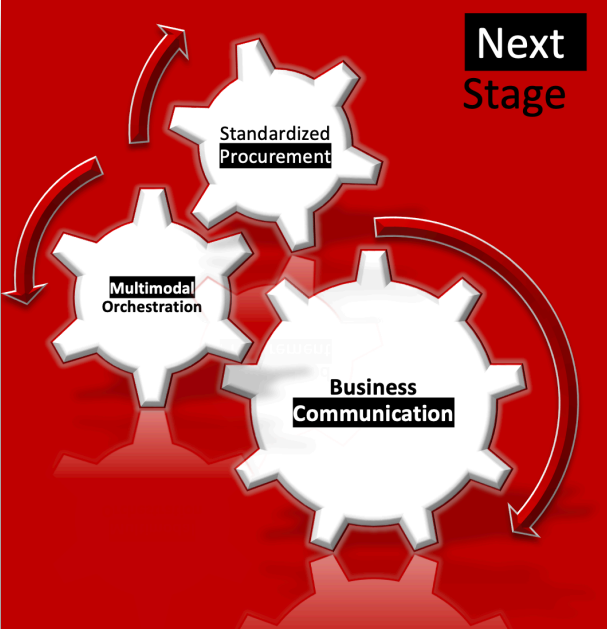
Since IBM's first patent on automated recognizing of the defined objects within the pictures, instead of tagging them manually (to reflect the value of the algorithm discussed in a well-known ongoing court case in the U.S., IBM vs Zillow), one may quickly discover the importance of both the reuse of the properly tagged data and the algorithms that may indicate the elements that are of the same type or kind.

As for the initial phase of our research, the authors strongly agree that the prominent approach of teaching the youngest using pictures has a more significant impact than words, or even complex sentences. It is observed, f.e., when examining the importance of explanatory techniques and patterns within business communication. This concept has already been augmented and enforced into picture dictionaries (and visual dictionaries) that embrace the efficacy of recognizing simplified shapes. Furthermore, as the emotions may already indicate the type of information for the purpose of the Big Data sets analyses, there seem to be no obstacles in providing explanatory information by using more or less complicated signs, symbols, or pictures. To close the final bracket, as one wants to "code the machine code" to try to align to or cooperate with the non-situational cognition, one can consider the comprehensive approach of notable Unicode by employing the simple reverse order.

Multi-levelled and multi-purpose Interoperability based on the imagery? Consequently, one may recognize a sort of evident observation as soon as one acknowledges the ancient messages left in the Pyramids and endeavor to answer the question of the reason why they were not made of a standardized set of letters. In fact it is hardly easy to count the remarks that come to mind after one examines the holistic reuse of already existing findings that were delivered on how the mind operates while using the different (both reusable and non-reusable) sets of graphical representations, kinds of communications indicators, i.e., letters, words, signs and symbols; it counts to ultimate introspections to pictural-based communications somehow already had found

the pure simplicity that is extremely useful within both international communication and categorizing-by-design the types of gathered data to be reused subsequently.

Eventually, it is genuinely worth saying that what is more promising, in fact, is that one recognizes that we can use images both to describe the metadata, make the order within the datasets, and, finally, in the creation of the data itself that may remain essential for system and application architecture, engineering, designing and implementing the operating models, and the reuse of data based on the data literacy skill.



Next Stage

Standardized Procurement

Multimodal Orchestration

Business Communication

ENDORSE
Business Communication Skills in international AI-based solutions

"Words or speech, written or spoken, do not appear to play any part at all in the mechanism of my thought process."

The basic psychic elements of thought are certain signs and more or less clear, pictures, which can be reproduced and combined "to order"

Albert Einstein

"It is important that we can understand the true psychical behavior so when we make approximations, we recognize consequences"

Donald P. Greenberg

What can be expected in the next steps? First, Multimodal Orchestration seems to require Standardized Procurement, as one would implement the already known questions and answers in the field of effective Business Communication. To open up the discussion, it is worth recalling the phrase that comes from Albert Einstein: "Words or speech, written or spoken, do not appear to play any part at all in the mechanism of my thought process. The basic psychic elements of thought are certain signs and more or less clear pictures, which can be reproduced and combined "to order", extended by the remake given by Donald P. Greenberg (1988) that "it is important that we can understand the true psychical behavior so when we make approximations, we recognize consequences". In fact, it is tough to disagree with the statement that "a picture is something between a thought and a thing," especially within the process of creating images, representations, or simulations of reality (Samuel Taylor Coleridge, 1989).

Business Communication Skills in international AI-based solutions
Majchrowska, A., Majchrowski, R.

*Majchrowska, Agata, AI & Data Expert | CAIIA A&R Research Scientist; Research Lab CODR.PL, WWSIS
Majchrowski Robert, Analyst | Student; University of Leeds, Leeds University Trade and Investment Society
Post-conference paper: ENDORSE 2023. The European Data Conference on Reference Data and Semantics. 14-16 march 2023*

References					
Andwander A., Friederici A, Wei X.	How our Native Language Shapes Our Brain Witin	Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig	Max Planck Institute	neurosciencenews.com	2023
Bereiter C.	Situated Cognition and How to Overcome It	Centre for Applied Cognitive Science	The Ontario Institute for Studies in Education	In D. Kirshner & J&A Whitson(Eds->) Situated cognition: Social semiotic, and psychological perspectives (pp. 281-300), Hillsdale, NJ: Erlbaum	1997
Gouran, D.	Communication skills for group decision making	Skills in public and professional contexts	Pensylvania State Univeristy	Lawrence Erlbaum Asociates, Publishers, IEA 2003	2008
Hajek Ch., Giles H	New Directions in Intercultural communication competence: the process model	Handbook of communication and social interaction skills edited by John O. Greene and Brant R. Burleson	Purdue Univeristy	Lawrence Erlbaum Asociates, Publishers, IEA 2003	2008
Hembree R.,	The Complete Graphic Designer	A guide to understanding graphics and visual communication	Beverly Masachusetts	RockPortPublishers 2006, 2011	2008
Marie, M., Negroponete, N.	A metaphoric cluster analysis of the rhetoric of digital technology	Thezes Digitization Project	California State University, San Bernardino,	CSUSB ScholarWorks	2005
Rowan, K.	Informing and explaining skills: theory and research on informative communication	Function-Focused Communication Skills	George Mason University, Fairfax, Virginia	Lawrence Erlbaum Asociates, Publishers, IEA 2003	2008
United States Court of Appeals for the Federal Circuit	United States Court of Appeals for the Federal Circuit	Case: 21-2350	INTERNATIONAL BUSINESS MACHINES CORPORATION, Plaintiff-Appellant v. ZILLOW GROUP, INC., ZILLOW, INC.,Defendants-Appellees	Appeal from the United States District Court for the Western District of Washington in No. 2:20-cv-00851-TSZ, Senior Judge Thomas S. Zilly.	2022
Verveij et al.	Emotion, rationality and decision-making: how to link affective and social neuroscience with social theory	Frontiers in Neuroscience		ncbi.nlm.nih.gov	2015