

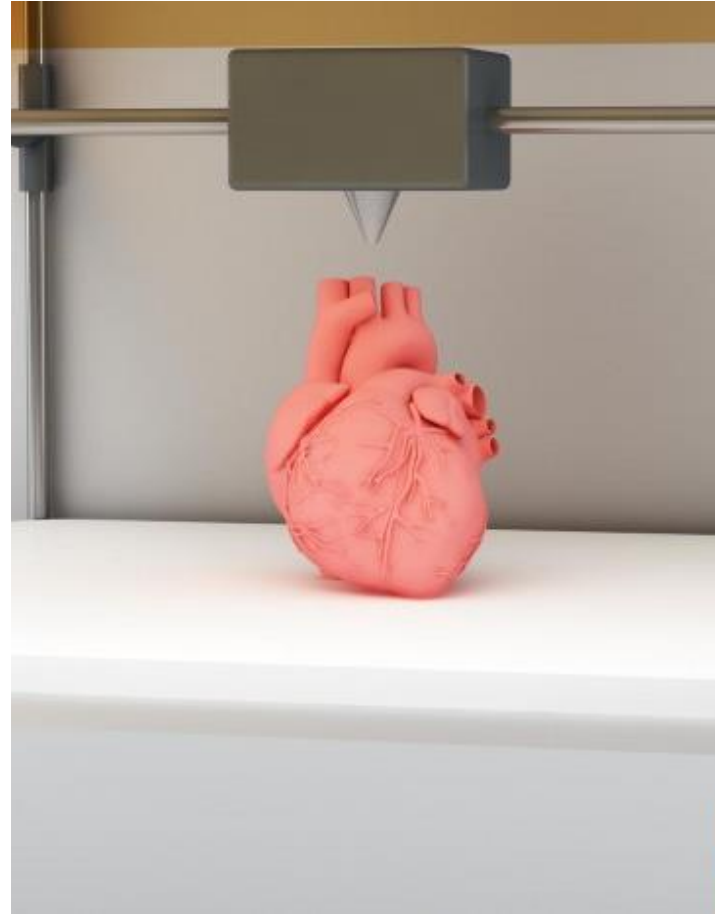
**AIIIC** 2024  
ROMA

# TECNOLOGIE, MODELLI DI SERVIZIO E RISULTATI: UNA PROSPETTIVA ORGANIZZATIVA

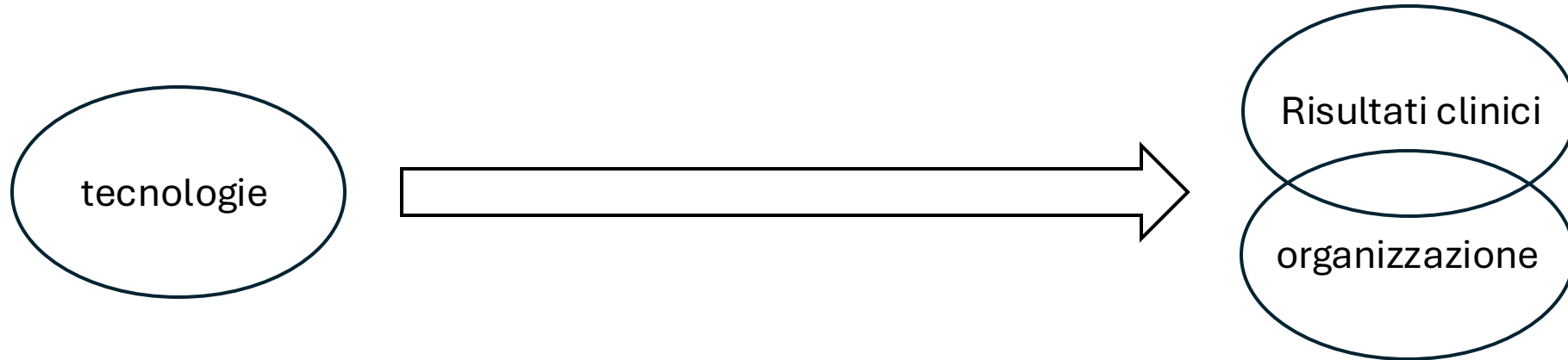
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# Premessa: casi studio considerati



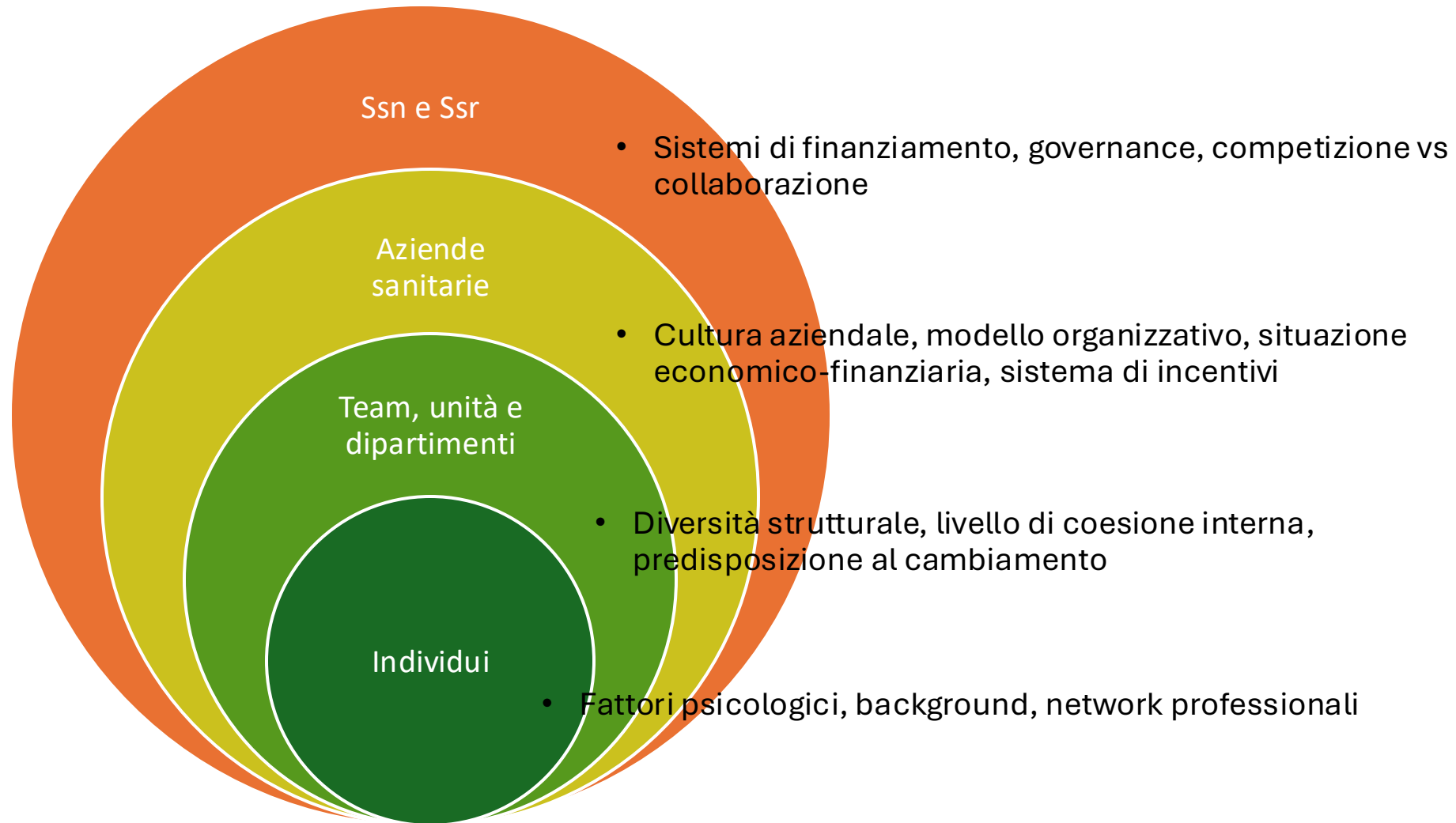
# Impatto delle tecnologie



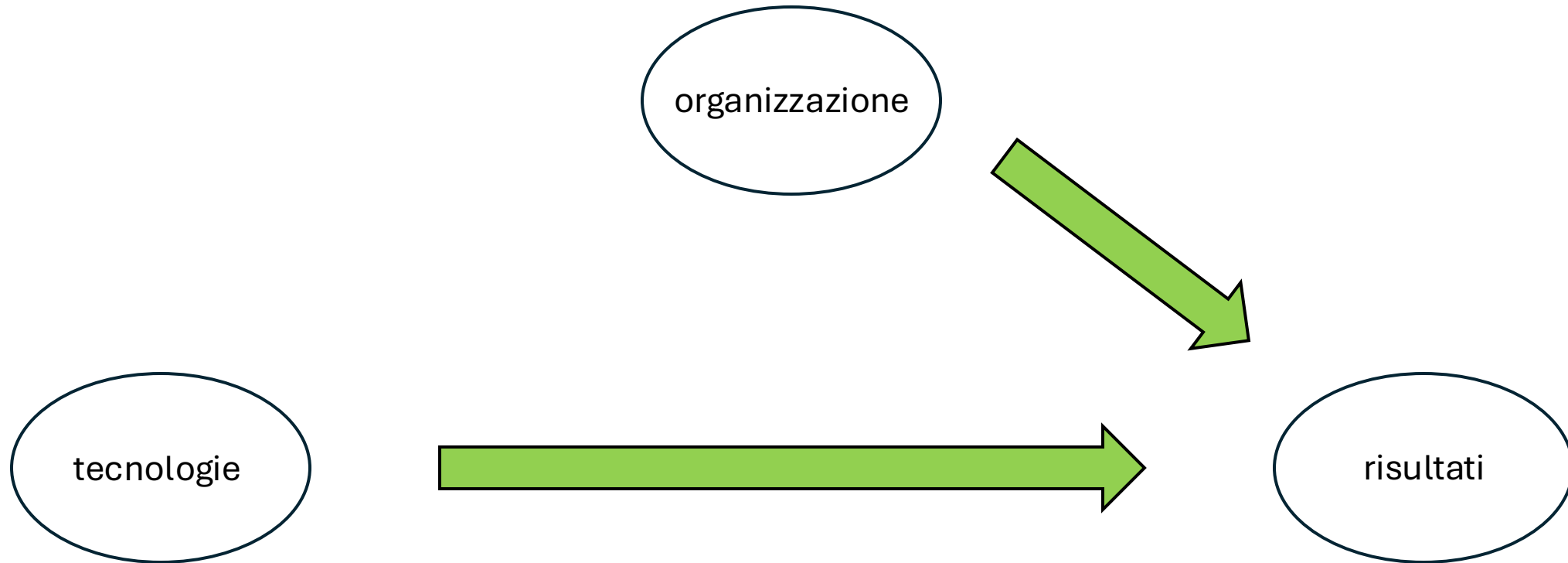
- Approccio orientato all'offerta
- «Episodi» di cura
- Omogeneità di competenze e know-how
- Lavoro individuale
- Interazione disciplinare
- Approccio «eneddotico»

- Approccio «patient-centered»
- «Percorsi» di cura
- Eterogeneità di competenze e know-how
- Team work
- Interazione multiprofessionale
- Approccio «evidence-based»

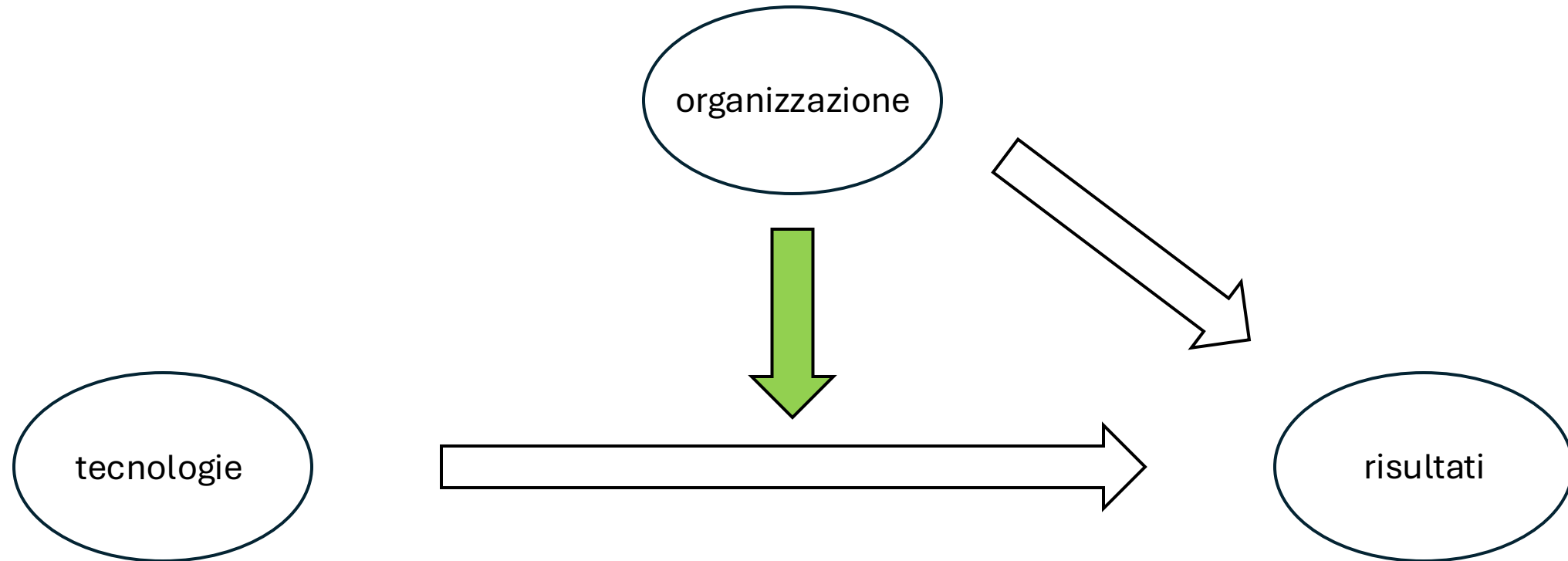
# Fattori organizzativi «in gioco»



# Tecnologie, Organizzazione e Risultati: quale relazione?



# L'Organizzazione come elemento di «mediazione»



# Organizzazione come mediatore d'impatto

## Augmenting Medical Diagnosis Decisions? An Investigation into Physicians' Decision-Making Process with Artificial Intelligence

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### To Engage or Not to Engage with AI for Critical Judgments: How Professionals Deal with Opacity When Using AI for Medical Diagnosis

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**Abstract.** Artificial intelligence (AI) technologies promise to transform how professionals conduct knowledge work by augmenting their capabilities for making professional judgments. We know little, however, about how human-AI augmentation takes place in practice. Yet, gaining this understanding is particularly important when professionals use AI tools to form judgments on critical decisions. We conducted an in-depth field study in a major U.S. hospital where AI tools were used in three departments by diagnostic radiologists making breast cancer, lung cancer, and bone age determinations. The study illustrates the hindering effects of opacity that professionals experienced when using AI tools and explores how these professionals grappled with it in practice. In all three departments, this opacity resulted in professionals experiencing increased uncertainty because AI tool results often diverged from their initial judgment without providing underlying reasoning. Only in one department (of the three) did professionals consistently incorporate AI results into their final judgments, achieving what we call *engaged augmentation*. These professionals invested in *AI interrogation practices*—practices enacted by human experts to relate their own knowledge claims to AI knowledge claims. Professionals in the other two departments did not enact such practices and did not incorporate AI inputs into their final decisions, which we call *unengaged “augmentation.”* Our study unpacks the challenges involved in augmenting professional judgment with powerful, yet opaque, technologies and contributes to literature on AI adoption in knowledge work.

**History:** This paper has been accepted for the Special Issue on Emerging Technologies and Organizing.

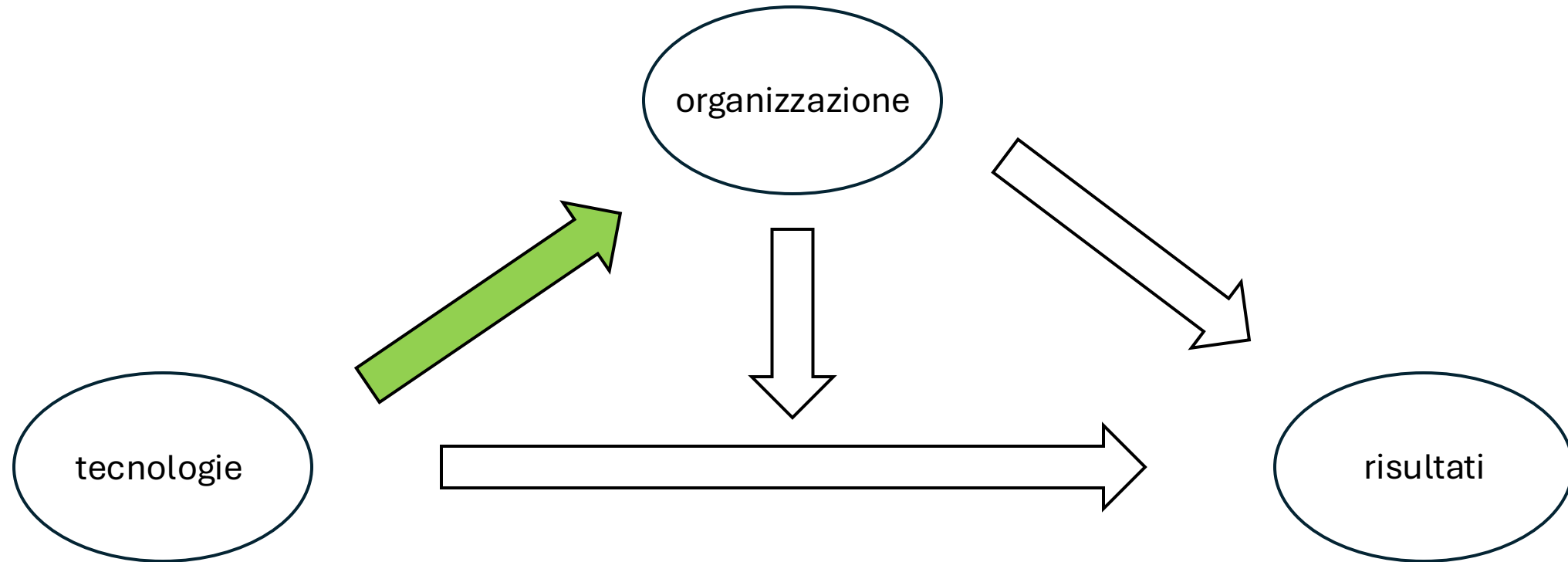
**Abstract.** Systems based on artificial intelligence (AI) increasingly support physicians in diagnostic decisions. Compared with rule-based systems, however, these systems are less transparent and their errors less predictable. Much research currently aims to improve AI technologies and debates their societal implications. Surprisingly little effort is spent on understanding the cognitive challenges of decision augmentation with AI-based systems although these systems make it more difficult for decision makers to evaluate the correctness of system advice and to decide whether to reject or accept it. As little is known about the cognitive mechanisms that underlie such evaluations, we take an inductive approach to understand how AI advice influences physicians' decision-making process. We conducted experiments with a total of 68 novice and 12 experienced physicians who diagnosed patient cases with an AI-based system that provided both correct and incorrect advice. Based on qualitative data from think-aloud protocols, interviews, and questionnaires, we elicit five decision-making patterns and develop a process model of medical diagnosis decision augmentation with AI advice. We show that physicians use second-order cognitive processes, namely metacognitions, to monitor and control their reasoning while assessing AI advice. These metacognitions determine whether physicians are able to reap the full benefits of AI or not. Specifically, wrong diagnostic decisions often result from shortcomings in utilizing metacognitions related to decision makers' own reasoning (self-monitoring) and metacognitions related to the AI-based system (system monitoring). As a result, physicians fall for decisions based on beliefs rather than actual data or engage in unsuitably superficial information search. Our findings provide a first perspective on the metacognitive mechanisms that decision makers use to evaluate system advice. Overall, our study sheds light on an overlooked facet of decision augmentation with AI, namely, the crucial role of human actors in compensating for technological errors.

**History:** This article was accepted by Special Section Editors Hemant Jain, Balaji Padmanabhan, Paul A. Pavlou, and Raghu T. Santanam for the *Information Systems Research* Special Section on Humans, Algorithms, and Augmented Intelligence: The Future of Work, Organizations, and Society.

**Funding:** This work was supported by the German Federal Ministry of Education and Research [Grant 13GW0093B].

**Supplemental Material:** The online appendices are available at <https://doi.org/10.1287/isre.2020.0980>.

# Tecnologie come fattore «trasformativazionale»





# La tecnologia come fattore di cambiamento organizzativo

The Alignment of  
Technology and  
Structure through Roles  
and Networks

Stephen R. Barley  
Cornell University


This paper outlines a role-based approach for conceptualizing and investigating the contention in some previous research that technologies change organizational and occupational structures by transforming patterns of action and interaction. Building on Nadel's theory of social structure, the paper argues that the microsocial dynamics occasioned by new technologies reverberate up levels of analysis in an orderly manner. Specifically, **a technology's material attributes are said to have an immediate impact on the nonrelational elements of one or more work roles.** These changes, in turn, influence the role's relational elements, which eventually affect the structure of an organization's social networks. Consequently, roles and social networks are held to mediate a technology's structural effects. The theory is illustrated by ethnographic and sociometric data drawn from a comparative field study of the use of traditional and computerized imaging devices in two radiology departments.\*

## Losing Touch: An Embodiment Perspective on Coordination in Robotic Surgery

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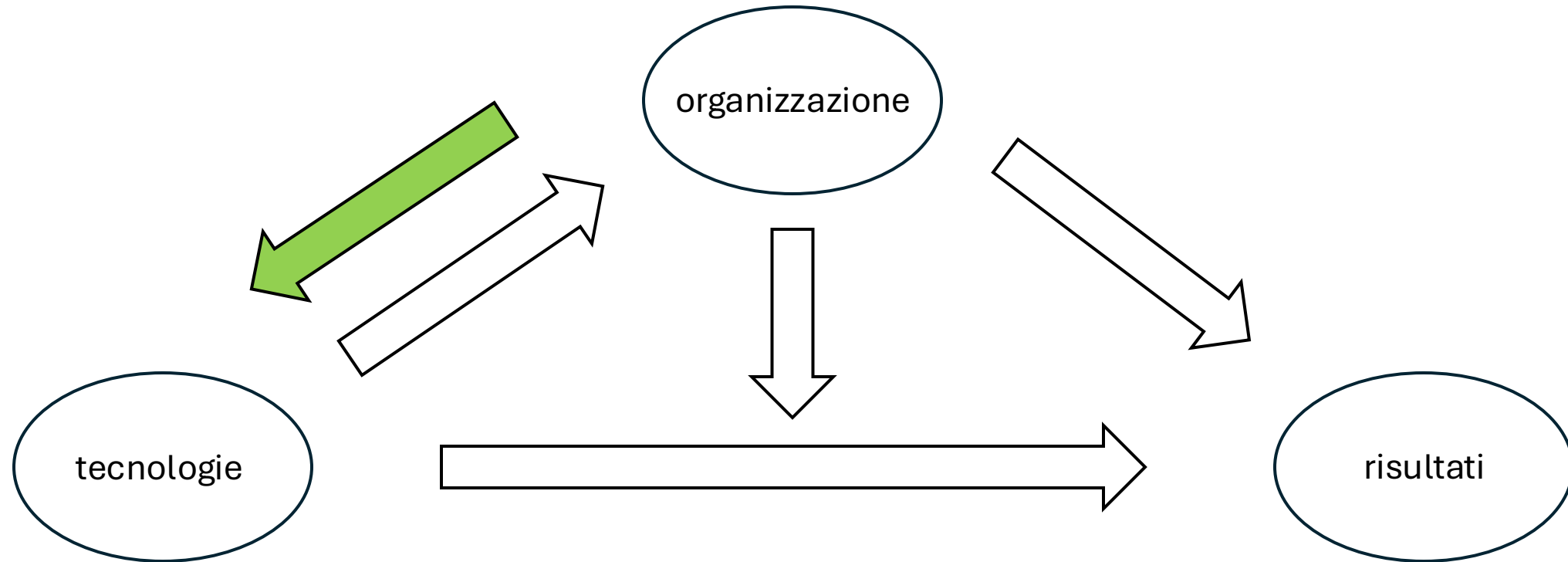
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**Abstract.** Because new technologies allow new performances, mediations, representations, and information flows, they are often associated with changes in how coordination is achieved. Current coordination research emphasizes its situated and emergent nature, but seldom accounts for the role of embodied action. Building on a 25-month field study of the da Vinci robot, an endoscopic system for minimally invasive surgery, we bring to the fore the role of the body in how coordination was reconfigured in response to a change in technological mediation. Using the robot, surgeons experienced both an augmentation and a reduction of what they can do with their bodies in terms of haptic, visual, and auditory perception and manipulative dexterity. These bodily augmentations and reductions affected joint task performance and led to coordinative adaptations (e.g., spatial relocating, redistributing tasks, accommodating novel perceptual dependencies, and mounting novel responses) that, over time, **resulted in reconfiguration of roles, including expanded occupational knowledge, emergence of new specializations, and shifts in status and boundaries.** By emphasizing the importance of the body in coordination, this paper suggests that an embodiment perspective is important for explaining how and why coordination evolves following the introduction of a new technology.

**Funding:** This work was supported by the Netherlands Organisation for Scientific Research [Grant 409-13-212]. S. Faraj acknowledges funding from the Canada Research Chairs program.

**Keywords:** embodiment • coordination • technological mediation • technology • robots • role reconfiguration • expertise • materiality • surgery

# L'organizzazione come fattore generativo di tecnologia



# Organizzazione come predittore di tecnologia

## How Much do Physician-Entrepreneurs Contribute to New Medical Devices?

Sheryl Winston Smith, PhD and Andrew Sfekas, PhD



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journal homepage: [www.elsevier.com/locate/socscimed](https://www.elsevier.com/locate/socscimed)



### Physician entrepreneurship: A study of early career physicians' founding motivations and actions

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#### ABSTRACT

The literature on professional socialization suggests that their training and socialization lead physicians to prioritize professionally prescribed activities over entrepreneurial activity. This leaves unexplained how and why early career physicians would engage in entrepreneurship, a behavior that many healthcare organizations now seek to encourage. To address this shortcoming, we conducted an inductive study, augmented with survey data, of UK National Health Service physicians involved in entrepreneurial projects. We detail a process of physician entrepreneurship underpinned by organizational improvement motives and identification with the organization. Entrepreneurs breached constraining roles and formed ventures which originated as intrapreneurial initiatives but shifted to individual-level resourcing. Entrepreneurial behaviors coincided with physicians' commitment to remain with the NHS albeit with adjustments to their career plans. Overall, the study suggests that physicians manage the pressure exerted by professional socialization by adapting both the kind of entrepreneurial projects and career pathways they pursue.

**Objectives:** As recent public and private initiatives have sought to increase the transparency of physician-industry financial relationships (including calls for restricting collaboration), it is important to understand the extent of physicians' contributions to new medical devices. We quantify the contribution of information from physician-founded startup companies to 170 premarket approval (PMA) applications filed by 4 large incumbent medical device manufacturers over the period 1978–2007. We ask: Are incumbents more likely to incorporate information from physician-founded firms than nonphysician-founded firms?

**Methods:** We matched the text in 4 incumbent medical device firms' PMAs (Medtronic, Johnson & Johnson, Boston Scientific, and Guidant) to the text in patent applications of 118 startup companies that received investment from these incumbents between 1978 and 2007. We use a text-matching algorithm to quantify the information contribution from physician and nonphysician-founded startups to incumbent firms' PMAs. We analyze correlates of backward citations and degree of overlap between incumbents' PMAs and startups' patents using negative binomial and tobit regressions.

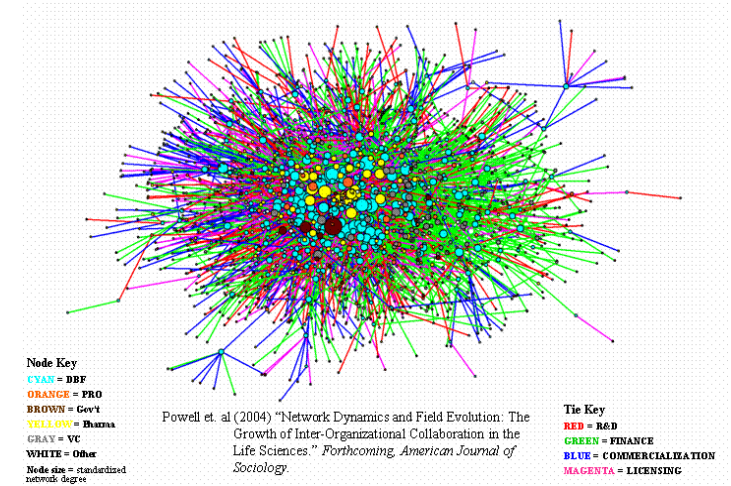
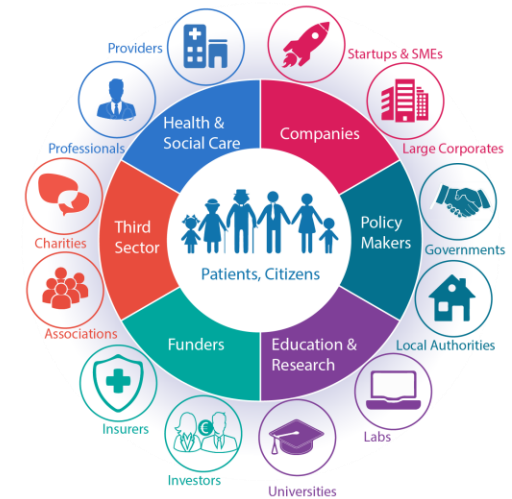
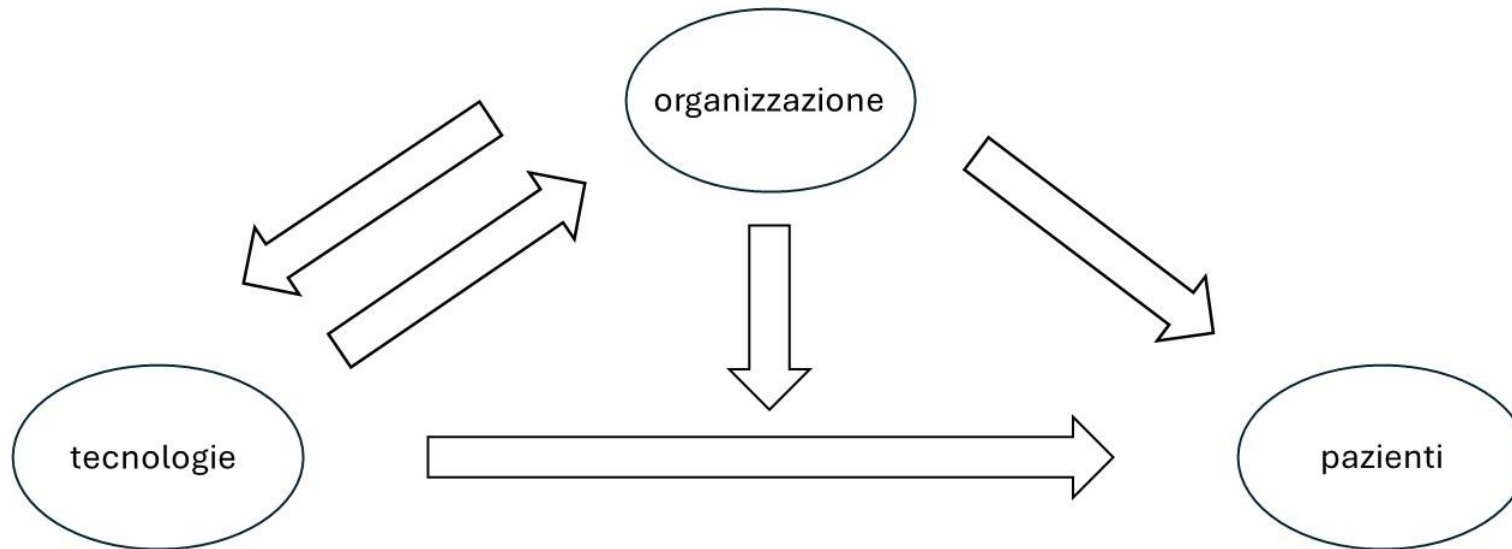
**Findings:** On average, physician-founded companies account for 11% of the information in PMAs, compared with 4% from non-physician-founded companies. Regression results show that incumbents are significantly more likely to cite physician-founded companies' patents and to incorporate them into new devices.

**Conclusions:** Physicians are an important source of medical device innovation. The results suggest that restrictions on financial relationships between providers and industry, while potentially improving patients' trust, may result in reduced medical innovation if physicians found fewer startups or if incumbent firms reduce investments in physician-founded startups.

**Key Words:** medical device innovation, physician innovation, sunshine act, FDA approval, text-matching methodology

(*Med Care* 2013;51: 461–467)

# Sistema di relazioni complesse: ecosistemi e reti



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**Grazie per  
l'attenzione!**



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