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A Socio-Business Perspective on the Adoption of AI in Healthcare: between Opportunities and Constraints

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The Business Model

A Business Model (BM) defines **how companies create, distribute, and capture value**

HOW

Business processes

How the company organizes its activities and resources

Operational Excellence



WHAT

Products and services

What the company offers to the market

Product Leadership



WHO

Customers and distribution channels

Who are the customers and how are they reached and managed?

Customer Intimacy



WHY

Value Proposition

Why customers choose that specific company over the competitors

Business Model Innovation



AI and Business Models

How Artificial Intelligence (AI) can redefine the four dimensions of the business model

HOW

Automation and customization

Automated processes, predictive maintenance, continuous and scalable delivery



WHAT

Smarter outputs

AI-enhanced products and services: recommendations, predictions, generated content, adaptive responses



WHO

Micro-segments and long tail

AI enables previously unprofitable niches to be served: mass customization at near-zero marginal cost



WHY

New needs satisfied

AI enables new value propositions: proactive assistants, preventive diagnoses, augmented creativity (e.g., vibe-coding)



The risks of automation

Dario Amodei

The Adolescence of Technology

Confronting and Overcoming the Risks of Powerful AI

January 2026

“That's why my prediction for 50% of entry-level white-collar jobs being disrupted is 1–5 years, even though I suspect we'll have powerful AI (which would be, technologically speaking, enough to do most or all jobs, not just entry-level) in much less than 5 years .”



WHAT: Smart Products

AI-empowered products

- Voice assistants and smart homes integrated into physical products
- Software with predictive capabilities and automatic personalization
- Autonomous vehicles and intelligent robotics

Bridging the Physical–Digital Divide

The connection between generative AI and physical products is just beginning:

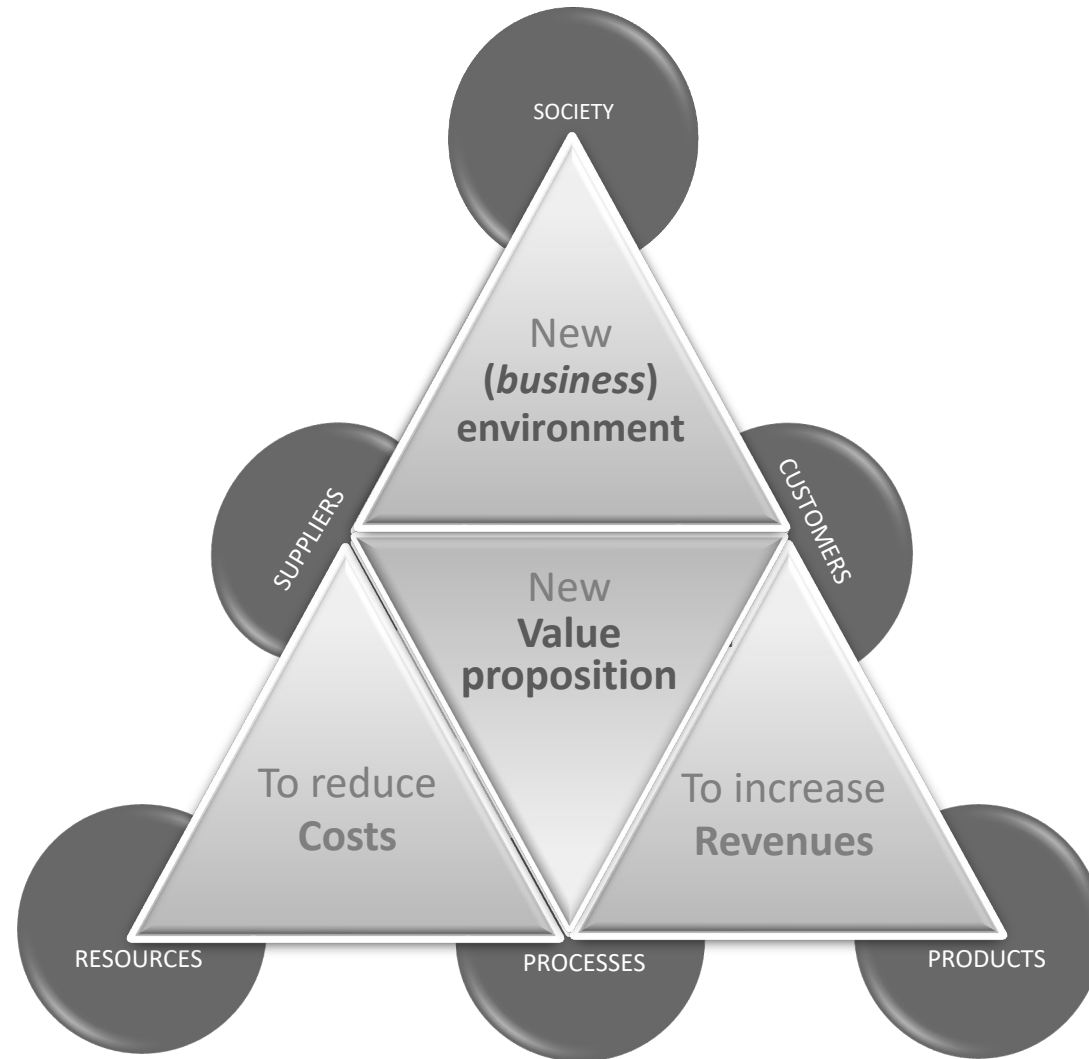
- GenAI excels at digital (text, code, images)
- But in the physical world the constraints are different: safety, regulations, hardware integration
- A considerable opportunity, though currently still in an exploratory phase

The case of autonomous cars



- An 18-year-old individual typically requires approximately 20 hours of formal driving instruction.
- Despite billions invested and years of intensive research, autonomous driving systems remain far from achieving full operational safety.

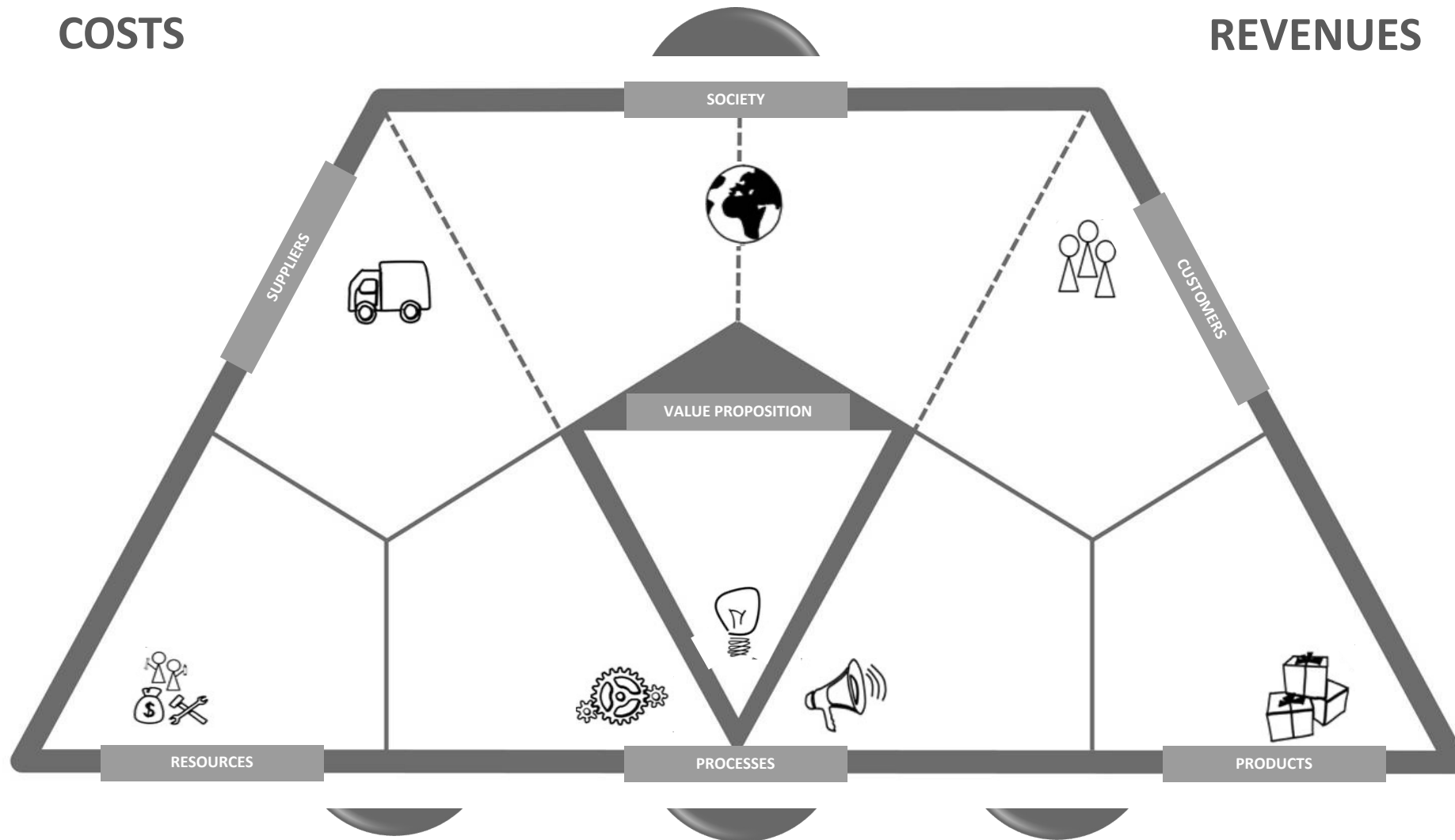
Business Model Canvas



Business Model Canvas

COSTS

REVENUES



WHY : AI Redefines the Value Proposition

Artificial intelligence is changing the reason why customers choose a product or service

70%

of CEOs fear the impact on their
business model

3-5 years

window to reconsider the value
proposition

+40%

perceived value with integrated AI

How AI Transforms the Promise of Value

- AI does not merely improve efficiency: it fundamentally redefines what customers expect to receive.
- Products once considered adequate risk obsolescence when competitors leverage AI to offer greater customisation, speed, and cost efficiency.
- Companies need to ask themselves, “ **Why is our product still relevant in an AI world?**”

From theory to practice on Artificial Intelligence: Insights from the Healthcare Sector

- Healthcare is a vast and complex field, encompassing numerous activities and domains.
- AI can contribute meaningfully across a wide range of activities – from data collection, analysis, and research through to clinical tasks, patient monitoring, telemedicine, and medical education.
- AI can help address some of the major challenges facing healthcare, including the growing demand for services from an ageing population with chronic conditions, constrained budgets, and the pressing need for disease prevention and early detection.

Artificial Intelligence in Clinical Medicine & Surgery

AI in clinical medicine can enhance clinical decision-making by supporting clinicians in the execution of their professional tasks.

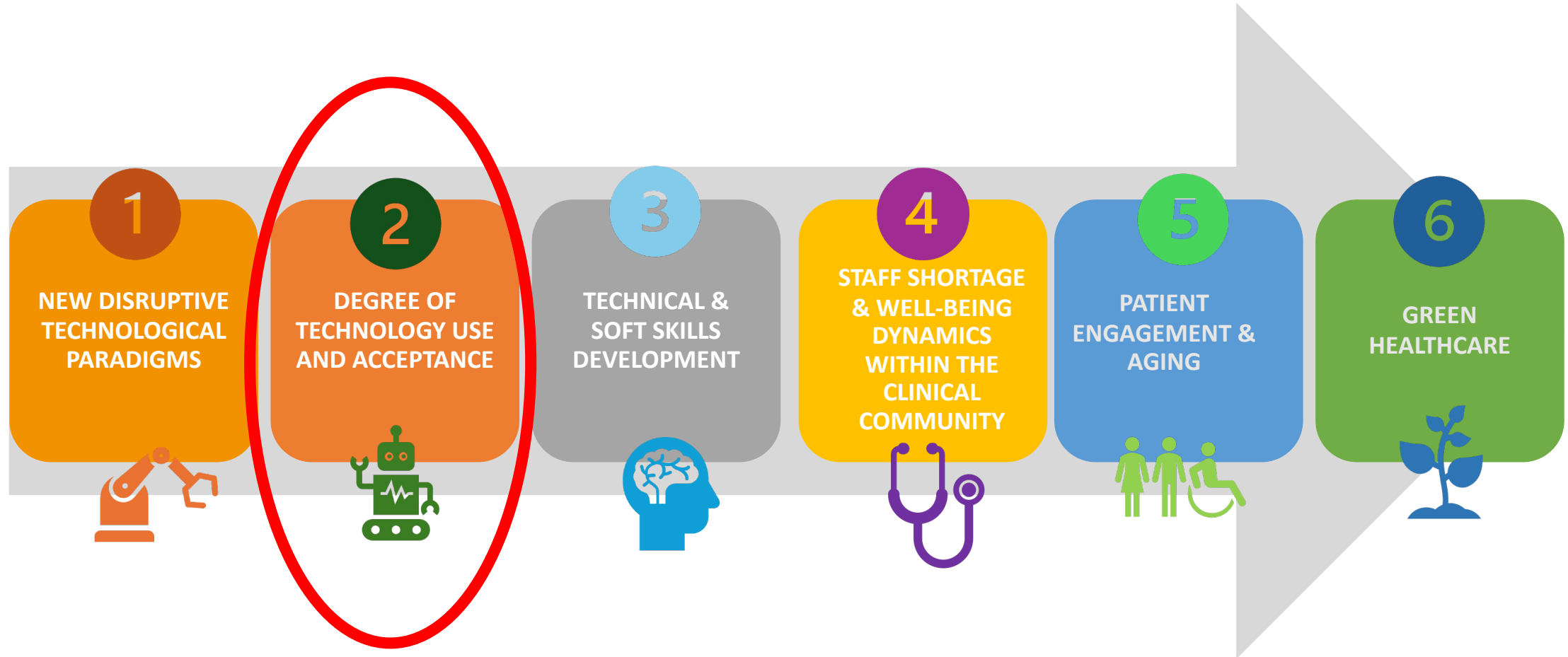
With regard to clinical activities, AI-based tools can provide support in the following areas:

More precise and accurate diagnosis based on large datasets – consider rare diseases: most physicians may have encountered only a few cases throughout their entire career, whereas AI can aggregate all such cases into a single learning system.

Risk management and predictions, for instance, before surgery (see for example the POTTER App)

AI-empowered surgical robots may conduct independent operations, particularly in challenging environments such as battlefields and long-duration space missions.

How we place such topics in the current healthcare scenario



Ethical issues in the use of AI

- In the current landscape, AI-based tools raise several ethical concerns, as they involve a broader range of stakeholders who must act and be held accountable: physicians, developers and technology providers, institutions, maintenance teams, and others.
- The Ethics Guidelines for Trustworthy Artificial Intelligence, issued by the European Commission, provide a valuable framework for understanding the principal issues and applying them within the clinical domain.

Ethical issues in the use of AI - A possible framework (1)

Requirement	Definition	Topics from clinical practice
Human agency and oversight	AI should support human autonomy and decision-making, acting as an enabler to a democratic and equitable society, by supporting the user's agency, fostering fundamental rights, and allowing for human oversight.	Clinical decision-making; optimal human-machine interface; non-technical skills and creativity as human intelligence
Technical robustness and safety	AI should be reliable and developed with a preventive approach to risk caused by the presence of other agents (human and artificial) that may interact with the system in an adversarial manner, ensuring at the same time the physical and mental integrity of humans	Monitoring continual learning AI; explainability of models' performance; optimal integration in clinical workflows; artificial stupidity, cybersecurity and cyber resilience
Privacy and data governance	Data governance should ensure the quality and integrity of the data used, its relevance, its access protocols, and the capability to process data, protecting privacy	Use of sensitive data, consenting and data ownership; business model in data management

Source: Cobiauchi, L., Verde, J.M., Loftus, T.J., Piccolo, D., Dal Mas, F., et al. (2022), "Artificial Intelligence and Surgery: Ethical Dilemmas and Open Issues", Journal of the American College of Surgeons, Vol. 235 No. 2, pp. 268–275.

Ethical issues in the use of AI - A possible framework (2)

Requirement	Definition	Topics from clinical practice
Transparency	Transparency must be granted to the elements relevant to AI, like the data, the system, and the business models, ensuring traceability, explainability, and communication	Accurate reporting of training data and model performance.
Diversity, non discrimination, and fairness	AI should enable inclusion and diversity throughout its entire life cycle, ensuring stakeholders' participation, with equal access through inclusive design processes as well as equal treatment.	Access to diverse and representative surgical data; access to the technology from developing countries; potential rewards of data availability; shared decision-making, co-production, and tailored approaches dynamics
Societal and environmental well-being	Stakeholders should be represented throughout the AI's life cycle, encouraging sustainability and ecological responsibility, also according to the SDGs	Clinical education and knowledge transfer; clinical skill set
Accountability	Adequate mechanisms should be put in place to ensure responsibility and accountability for AI and its outcomes, both before and after their development, deployment, and use.	Measurement, liabilities, rewards

Source: Cobiaichi, L., Verde, J.M., Loftus, T.J., Piccolo, D., Dal Mas, F., et al. (2022), "Artificial Intelligence and Surgery: Ethical Dilemmas and Open Issues", Journal of the American College of Surgeons, Vol. 235 No. 2, pp. 268–275.

From Theory to Practice: Surgeons' perspective on AI in decision-making

- Investigation conducted in 2021-2022 with the World Society of Emergency Surgery
- 650 responses from 72 countries

Main results:

- 69% of respondents declared they knew the meaning of AI, but only 17% gave a sound definition;
- Half of the community was enthusiastic and open to AI as a decision-making tool, while the remaining half was skeptical;
- Enthusiasm was more related to country and responsibility held than age;
- Traditional tools were preferred, like training, guidelines, and second opinions.

This compels us to reflect on the skills that may allow physicians to leverage optimal human-machine interactions.

In light of rapid technological advancements, a new strategic vision is required to prepare young physicians for their future rather than our past.

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Surgeons' perspectives on artificial intelligence to support clinical decision-making in trauma and emergency contexts: results from an international survey

Research | Open access | Published: 03 January 2023

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Artificial intelligence in trauma and emergency surgery: A quantitative study of perceived technology acceptance

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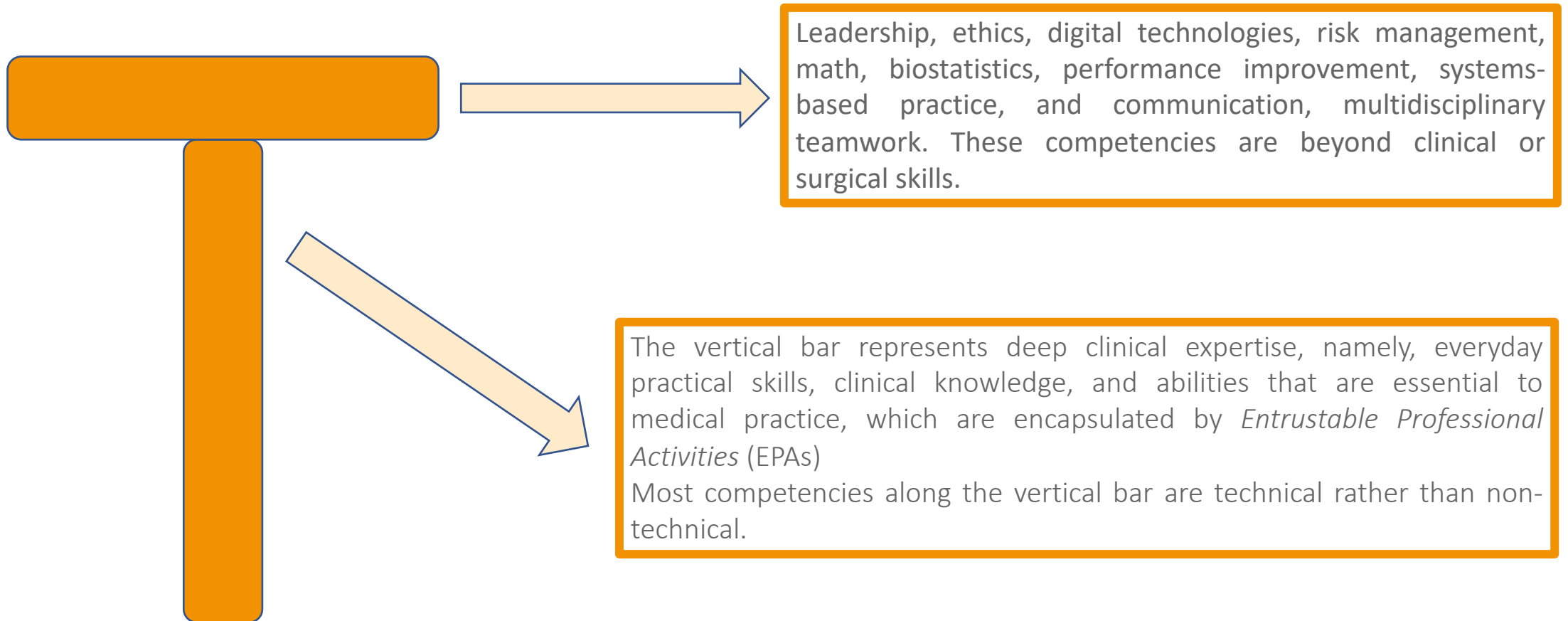
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A new competency model.

The T-Shaped Physician



Thanks for your attention

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