46° Convegno Nazionale
di Studi di Medicina Trasfusionale
Rimini, 13-15 maggio 2026

AI in Italian Transfusion Network: results of a national survey

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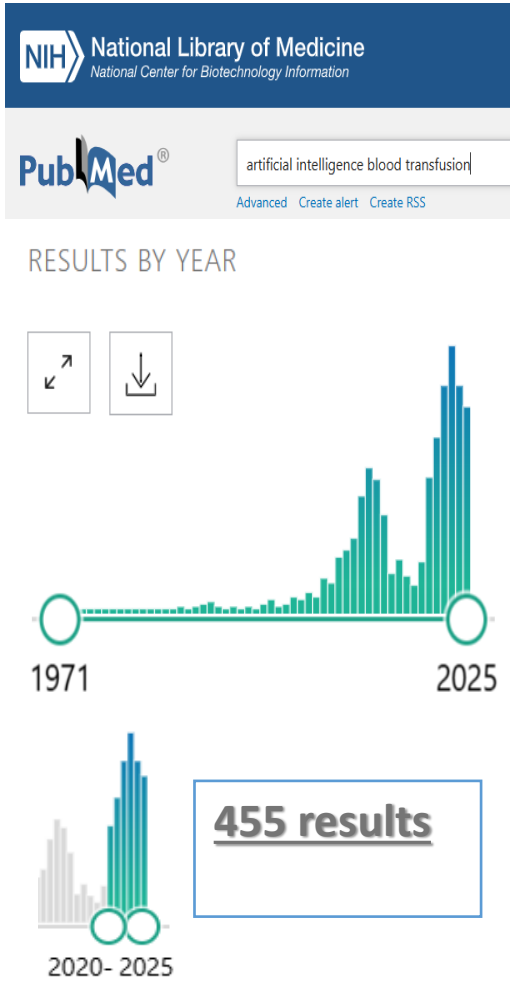
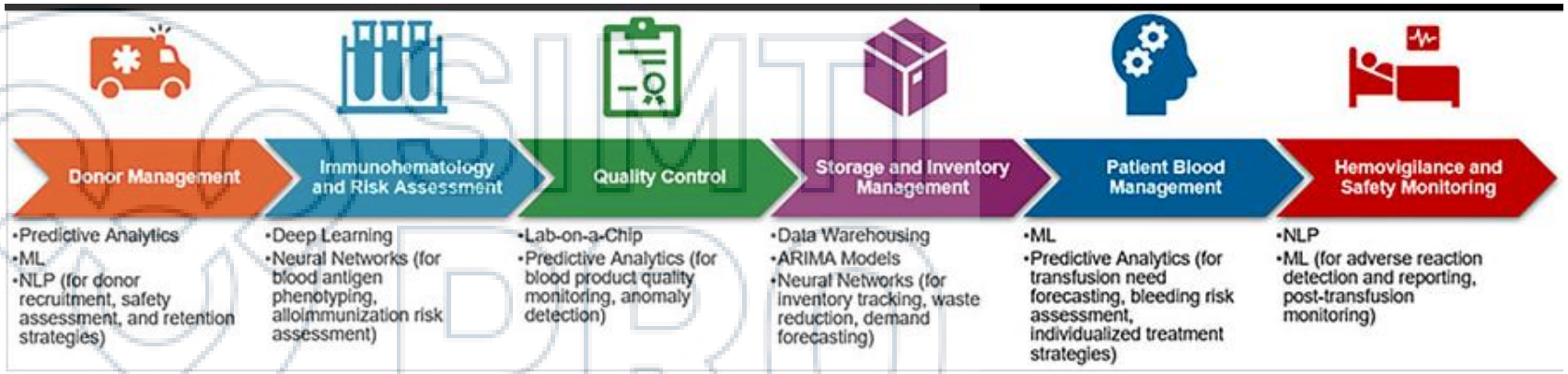
I declare that

in carrying out the function stated above at this event, I do not have any personal or third-party commercial interests, and that any relationships that I have had in the last two years with subjects with commercial interests are not such as to influence my function in order to draw any advantage.

AI applications in Transfusion Medicine





AI applications across the transfusion medicine (TM) process

Barzilai, M., Cohen, O., et al. (2025). AI Applications in Transfusion Medicine: Opportunities, Challenges, and Future Directions. Acta Haematologica

Key AI technologies and their applications in TM

Barzilai, M., Cohen, O., et al. (2025). AI Applications in Transfusion Medicine: Opportunities, Challenges, and Future Directions. Acta Haematologica

Technology	Applications
Machine learning (ML)	Predicting transfusion needs, assessing bleeding risk, donor management, and inventory optimization
Deep learning	Enhancing diagnostic accuracy in immunohematology, blood typing, and quality control of stored blood products
Neural networks	Forecasting platelet demand, assessing blood product viability
Natural language processing (NLP)	Extracting relevant details from clinical notes, automating hemovigilance reporting, and analyzing donor records
Predictive analytics	Assessing bleeding risk, forecasting transfusion needs, and optimizing PBM
ARIMA models	Time-series forecasting for platelet demand and inventory management
Lab-on-a-chip	Evaluating RBC quality through real-time monitoring of cellular integrity and biochemical markers
Data warehousing and integration	Streamlining inventory tracking, supporting hemovigilance workflows, and improving supply chain coordination

Survey – AI applications in Transfusion Medicine in Italy

Objectives

1. Assess current AI adoption
2. Understand implementation contexts and identify opportunities and good practices

Aim of the data collection

- ❑ analysis of the state-of-the-art of AI applications that may already be in use within the Italian transfusion network
- ❑ identification of the potential areas of development
- ❑ promotion of the cooperation for the development of AI initiatives

Sources

1 EBA survey

2 ISBT survey

Our team

Ursula La Rocca, Nadia Lopez, Francesca Martini, Donata Forioso

Web Survey | 8 questions

Forms

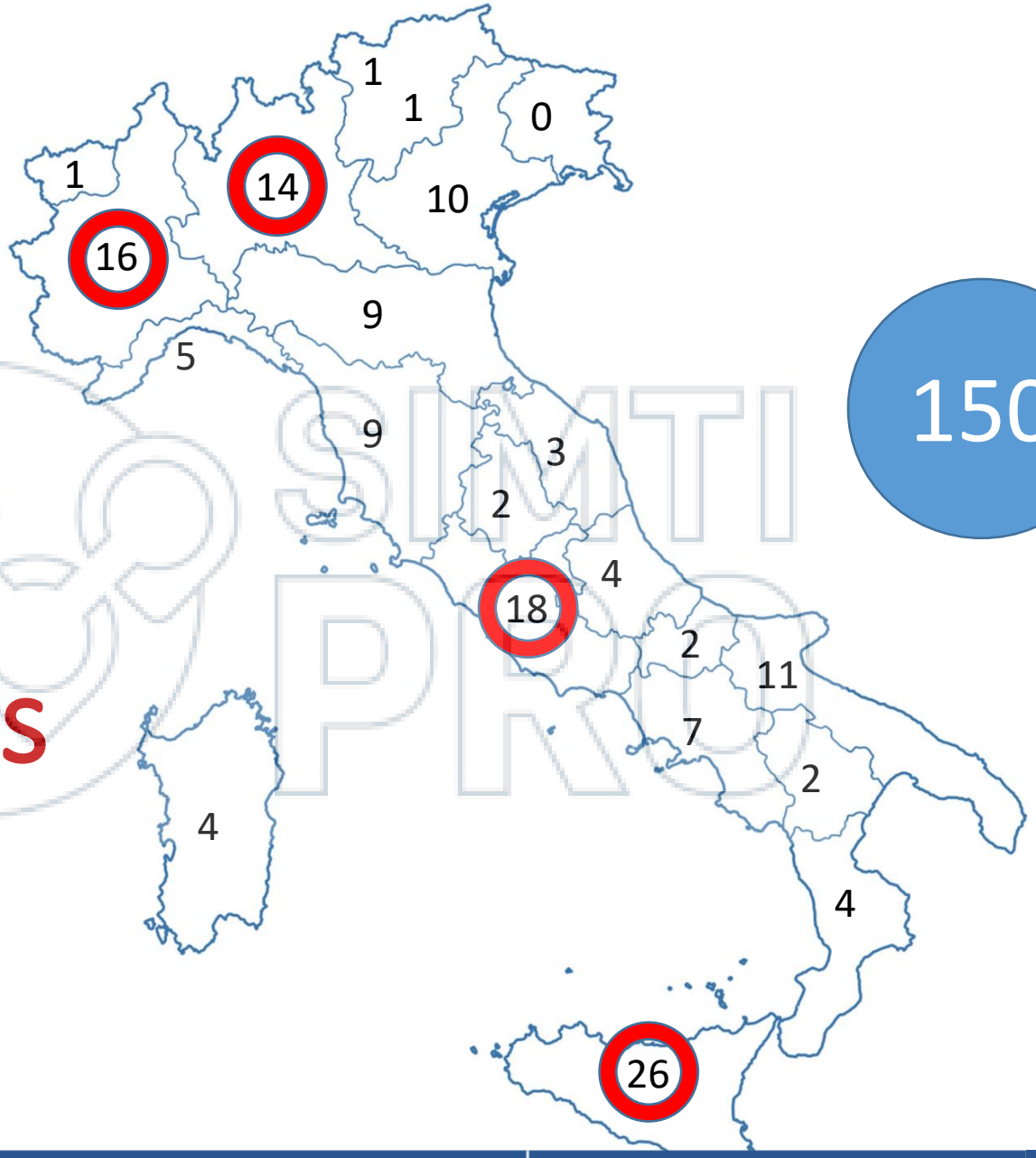
30 days ⏳ | January - February 2025|

Responses

EXPECTED	Blood Establishments = 276 max Blood donors' associations= at least 80 (at least 4 for each Region)
RECEIVED	Blood Establishments = 109 (39,5%) Blood donors' associations = 41

Total number of respondents: **150**

Geographical distribution of the respondents (BE+Associations)



150

Section 1 – Current adoption status

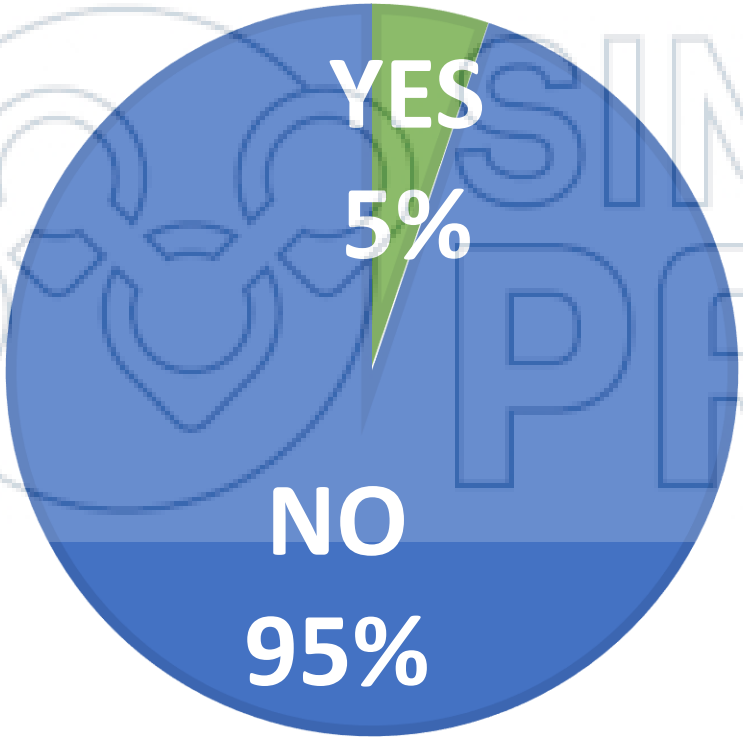
For the purposes of this survey, artificial intelligence (AI) refers to the use of computer systems to perform tasks that typically require human intelligence. This includes technologies capable of analyzing complex data, identifying patterns, making decisions, or carrying out tasks in a manner similar to human cognition.

Examples of AI in BEs may include:

- ✓ **Predictive analytics**, e.g. to forecast blood demand and availability, reducing waste and improving the appropriateness of use;
- ✓ **Machine learning**, such as the implementation of algorithms that can improve donor selection processes or detect anomalies in blood screening;
- ✓ **Natural language processing** (NLP), such as the use of chatbots to answer donors' frequently asked questions or for the automated processing of documents and reports;
- ✓ **Robotic process automation** (RPA), the use of AI-driven robots for repetitive tasks such as the sorting and packaging of blood components, or automation for data entry.

Question #1

Has your organization planned or already implemented AI-based processes?



Question #1

Has your organization planned or already implemented AI-based processes?

(80) No, but we are exploring the use of AI for the future……53,3%

(63) No, we are not even considering the idea……42%

(5) Yes, we already use AI in some processes……4%

(2) Yes, we have plans to use AI in some processes ……1,3%

Question #2 – Area of application

If already implemented or planned, please specify the area of application
✓ Selected options

- ✓ Donors' recruitment and retention……30%
  (appointment scheduling, donor database management, FAQ chatbots)
- ✓ Analysis of datasets……25%
- ✓ Other (not specified)……15%
- ✓ Clinical support……10%
- ✓ Shelf-life prediction of blood components……5%
- ✓ Blood components distribution……. ……5%
- ✓ Compliance with applicable regulations and standards……5%
- ✓ Financial resource management……5%

Question #2 – Area of application

☐ not selected options

- ❑ Demand forecasting
- ❑ Blood component management (collection and stock levels)
- ❑ Blood quality and safety (testing)
- ❑ Processing
- ❑ Logistics and tracking
- ❑ HR Management

Question #3 – Real world use

Describe how AI is used, specifying the relevant processes and applications (open ended)

- Data analytics and management tool (Genoa AVIS)
- Chatbot for Frequently Asked Questions (AVIS Italy)
- AI generated contents (Ravenna AVIS)
- AI-supported lab results interpretation (Caltanissetta BE + AVIS)
- Emopuglia integrated management system for donors and recipients, with middleware and inventory management (Altamura BE - Bari)
- Telemedicine home healthcare patient management (Nocera Inferiore BE - Salerno)

Question #4 – AI implementation

Stage of implementation

2 AVIS (GE e RA) + 2 BE (BA e SA) →

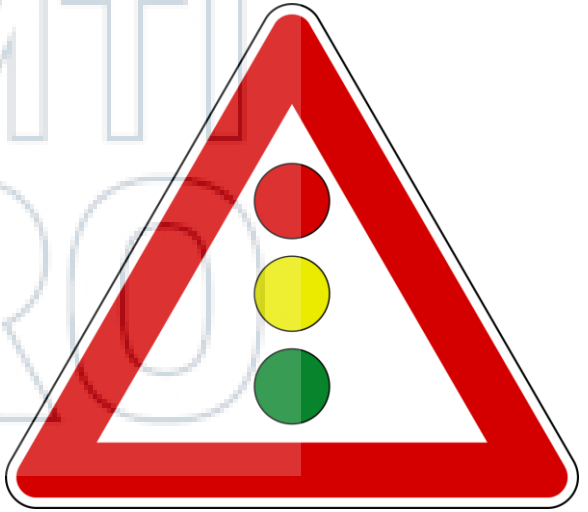
Research: system selection

AVIS Italy →

Pilot testing: work in progress

BE+ AVIS CL →

Implementation: full integrated



Question #5 – Main barriers

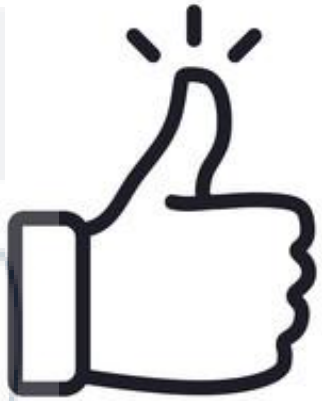
Why has the implementation been interrupted?

- Lack of human resources 1
- Budget restrictions 0
- Lack of skills 0
- Inadequate technology infrastructure 0
- Direction/DPO veto 0
- Other 0

Question #6 - Observed benefits

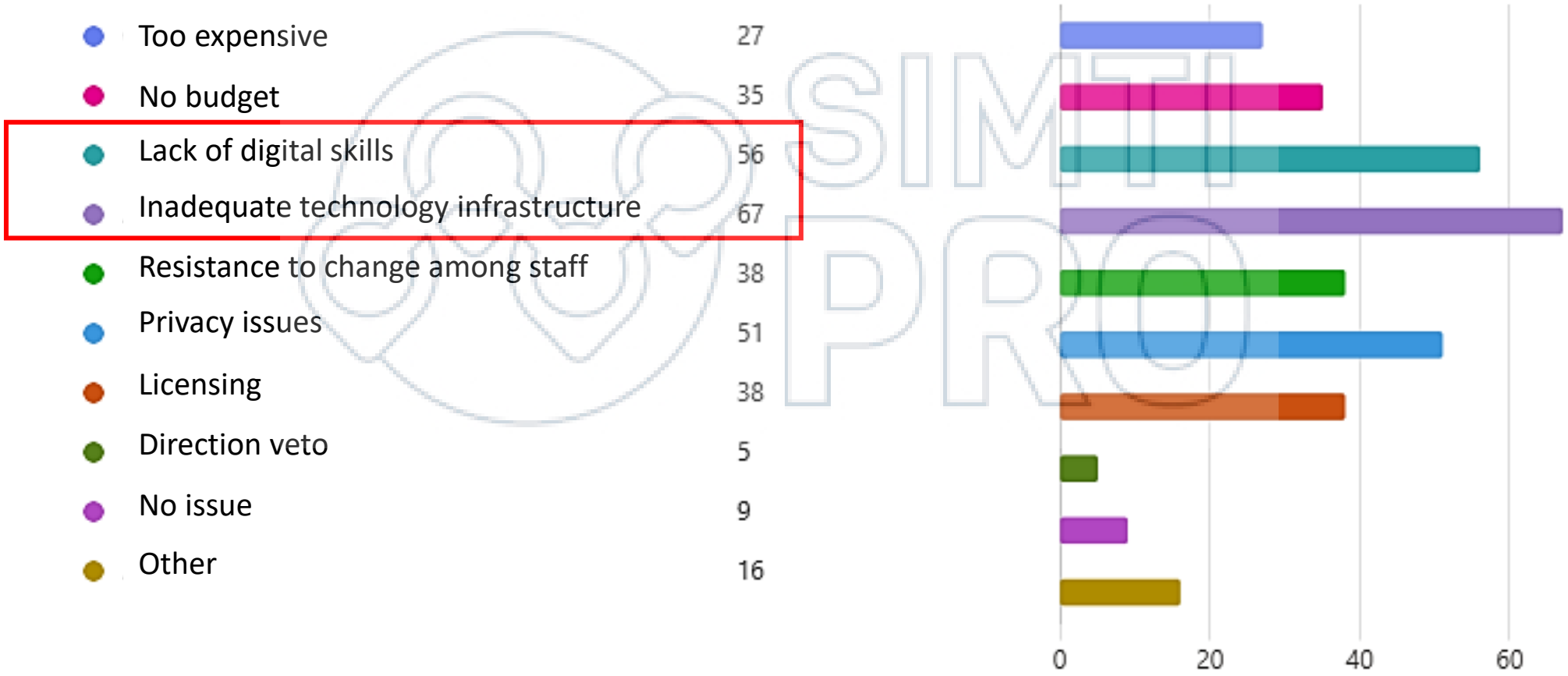
Open ended

1. Improved access for donors and potential donors to a real-time, always-available answers about eligibility (chatbot);
2. The AI-based platform for interpreting blood donation test reports enables blood donors to better understand their health status and keep a healthy lifestyle (app);
3. Increased efficiency (content creation).



Question #7 – Critical issues

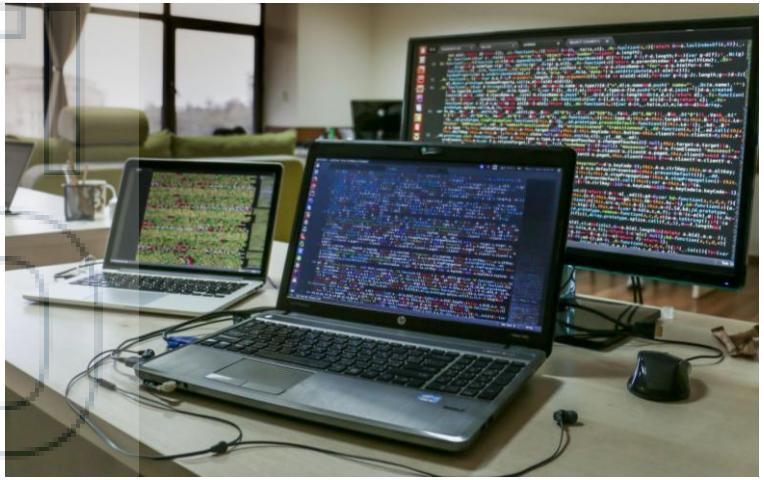
Critical issues to address for planning and implementation



Question #8 – Comments and suggestions

Open ended

1. Need for specific training
2. GDPR compliance
3. Ethics?
4. Guidelines?
5. Financial sustainability



Key messages

- Many BEs and volunteers expressed interest in the use of AI
- Need for specific training in digital skills
- In 2025 AI has been used mainly for donors recruitment and retention (chatbot and app)
- Concerns: budget, HR, technologies, data accessibility, privacy

Umberto I University hospital, Rome

Acknowledgements

- ☞ Thanks to all the respondents, your contribution was so precious
- ☞ Thanks in advance to anyone who would like to share with us their experience with AI
- ☞ Thank you everyone here for listening, enjoy the conference ☺

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