



Context

Car-t cells require a specific and **complex circuit**.

- The implementation of augmented **reality glasses** to digitize and facilitate the **traceability of the circuit** of these therapies, has been initiated.

The objective is to evaluate the tool during 2 risky stages of the circuit: reception and thawing.



Headband attachment

Adjustable front camera

Removable arm

Screen placed in front of the eye

Power button and charging port



Discussion-Conclusion

In view of these results, the glasses allow a notable **decrease in written traceability**. It issues did not occur during critical process steps. Nevertheless, **degraded procedures must be implemented**. The tool was deemed easy to use. Finally, the glasses make it possible to **simplify and secure the organization of the circuit**.

In the future, **changes to the software** as well as adaptations of the tool may allow its use in practice.



Methods

- **Practical tests were conducted**
 - Based on a **three-pronged evaluation grid**
 - **Organizational axis** → 7 items
 - **Technical/IT axis** → 7 items
 - **Ergonomic axis** → 12 items
 - **Four trained operators** participated in the evaluation.
 - Using a **Likert scale** as a rating system
 - Tests were conducted under conditions similar to **real-life conditions** (dummy bags).
- **Usability Questionnaire:** F-SUS, F-system Usability Scale Descriptive
- **Analysis of Results**
 - Using **Excel®** (version 2019, Microsoft, Redmond, Washington, USA)



Results

- **32 reception tests (R) and 32 thawing tests (T)** were performed (8 per operator).
- **F-SUS questionnaire score : 83/100 ± 7**, judging the usability of the tool very acceptable.

BENEFITS

- **No alteration of product quality** : correct process duration, 2 minutes 48 seconds ± 41 seconds outside the tank versus 3 minutes 0 seconds without the tool.
- **Reduction of the number of information items to be entered** from 14 to 0 (R) and 10 to 1 (D).
- **Possible backups:** Accessibility and readability of data on the software were rated 5/5 ± 0 and 4.5/5 ± 0.5, respectively. 97.9% (n=427) of the photos taken were usable.

DISADVANTAGES

- **Exporting files** is currently not possible.
- Regarding PPE, **the visor**, rated 1.8/5 ± 1.3, **presents a constraint**.
- **Random IT and network issues:**
 - Label scan repetitions (max. 5/test): 39.1%.
 - Short latencies (max. 4/test): 25%.
 - Procedure stoppages (max. 1/test): 10.9%
 - Four instances of misuse of the tool were recorded.
 - Repeat photoshoots were required in 28.1% of cases.