Replior

Gamification in Clinical Trials:

A Practical Guide to Engagement, Data Quality, and Retention

Keeping patients engaged is hard.
This guide shows how clinical teams use simple behavioral design and sensor-based data collection to improve retention and data quality, without asking patients or sites to do more.

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Clinical Trials Are Getting Harder: Gamification Can Help

Clinical trials are essential for bringing new treatments to market. But every year, sponsors and research teams face a growing challenge: patients drop out. Tasks are skipped. Protocols are missed. Timelines stretch. Costs climb. And the data becomes inconsistent.

This isn't just a process issue. It's a participation issue.

Today's trials ask a lot of people. Participants are expected to complete daily diaries, attend regular visits, follow complex medication schedules, and stay engaged over long timelines. Even the most committed patients can fall behind when the experience doesn't support them in the right way.

The impact is clear:

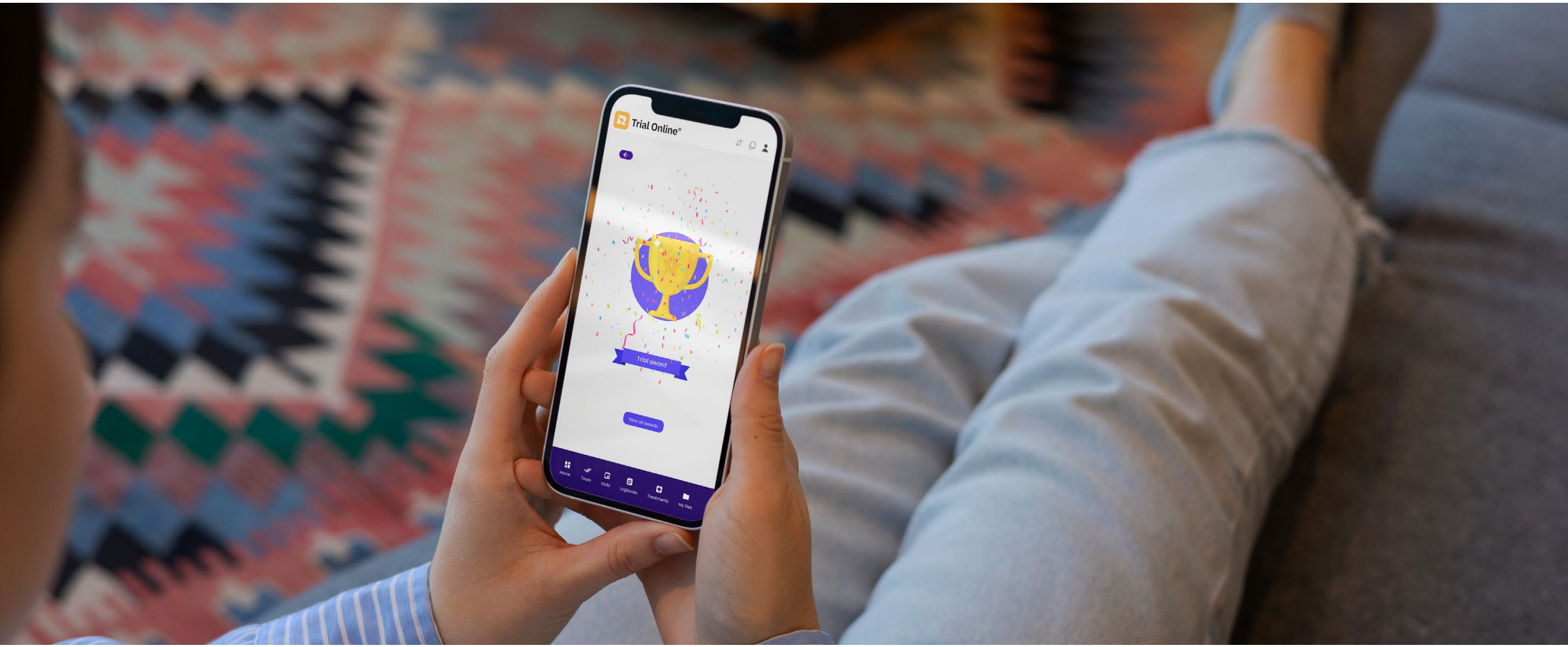
- Dropout rates can reach 30% or more in long-term studies
- Compliance often suffers, especially for tasks like daily ePRO entries
- Missing or late data reduces the reliability and completeness of the dataset
- Sites and sponsors face added costs to compensate for gaps

Even the most advanced protocol or platform can't help if patients lose interest or feel like their role is purely transactional.

That's where gamification comes in.

Gamification applies simple and familiar techniques, including progress bars, milestone badges, and helpful reminders to clinical tasks. It helps patients stay on track by making each interaction clearer, more structured, and more rewarding.

When done well, gamification can improve engagement and data quality without adding burden. And it offers something traditional systems often lack: a sense of progress, purpose, and personal investment.



What Gamification Is and Isn’t

Gamification doesn’t turn clinical trials into games.

It uses behavioral techniques that help people stay involved in daily study tasks. In clinical trials, that means giving patients the clarity, encouragement, and sense of progress they need to keep going. All while staying grounded in the science.

That might look like:

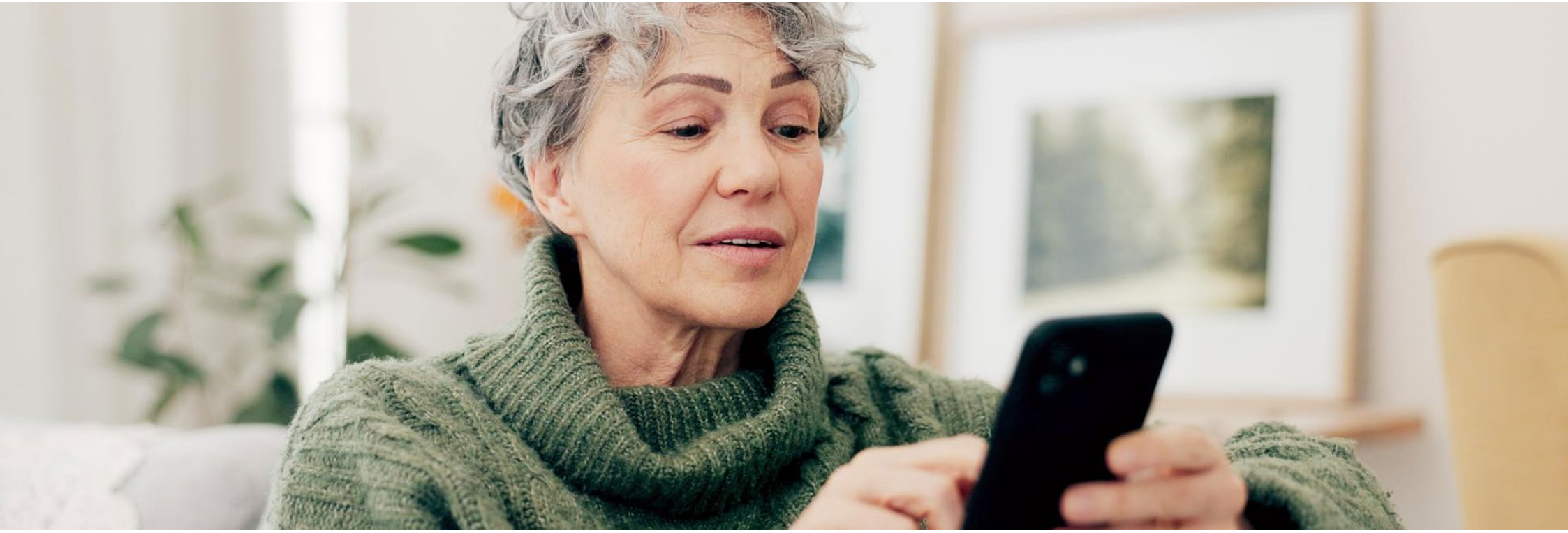
- A progress bar that shows how far a patient has come
- A reminder that reinforces what still needs to be done
- A badge that celebrates a milestone reached
- A personal summary screen showing completed tasks, missed entries, or upcoming study activities

Why does this work? It’s grounded in behavioral psychology. Human behavior is shaped by a few simple drivers:

- We like to finish what we start.
- We like to feel our time is meaningful.
- We like to see progress and get feedback.
- We like to feel connected to something bigger than ourselves.

Gamification taps into these drivers in small but powerful ways. When done well, it makes daily trial activities more structured, more understandable, and more rewarding.

Other industries, from education to fitness tracking, have long used gamification to keep people engaged with long-term behaviors. Clinical trials can apply the same techniques to improve protocol adherence and patient experience, without compromising scientific rigor.



Note: Gamification principles applied here are informed by Yu-kai Chou's Octalysis model and similar behavior change frameworks used in health psychology.

Why Gamification Belongs in Clinical Trials

Gamification is a behavioral design method grounded in evidence. It can support engagement, reduce dropout, and improve protocol adherence in clinical trial settings.

A behavioral framework called Octalysis, developed by Yu-Kai Chou, has been applied in healthcare, education, and consumer health to help people stay engaged in long-term, high-friction tasks.

It identifies eight core motivators that influence how people interact with structured activities:

1. **Purpose (Epic Meaning):** Feeling part of something bigger
2. **Progress (Development & Accomplishment):** Seeing improvement
3. **Choice (Autonomy):** Having control over how tasks are completed
4. **Ownership:** Feeling personally responsible for success
5. **Social Connection:** Knowing others are involved
6. **Scarcity:** Not wanting to miss an opportunity
7. **Curiosity:** Seeking new or unexpected outcomes
8. **Avoidance:** Not wanting to lose progress already made

These motivators align closely with the behavioral challenges seen across trial phases.

For example:

- During recruitment and screening, purpose helps participants understand why their contribution matters.
- In data collection phases, progress and avoidance encourage consistency in ePRO or diary tasks.
- Throughout longer studies, features that reinforce ownership and allow small elements of choice help reduce disengagement over time.

By connecting routine trial activities to well-understood human motivators, gamification helps participants stay engaged across weeks or months of participation.

Applied thoughtfully, behavioral design supports:

- Older adults, including those in trials with a median age of 69
- Trials involving sensitive conditions such as dermatology or mental health
- Studies with intensive or long-term data collection demands

Gamification supports the behaviors that make the science possible. When participants stay consistent, the data improves. With less friction and more consistent engagement, trial teams can increase adherence, reduce attrition, and generate more complete and reliable datasets without increasing patient burden.

Making Gamification Work in Real Trials

Clinical trials ask a lot from people. They require daily tasks, repeated visits, and strict routines that can last for months. Patients don't drop out because they don't care. They drop out because it's hard to keep going.

As we saw in Section 3, people stay engaged when they feel progress, purpose, and control. Gamification uses these ideas to help patients stick with the work that trials ask of them.

That's especially important now. Trial designs are getting more complex. Many use more apps, more data entry, and more steps for patients to remember. If engagement drops even a little, data gets missed. Timelines stretch. Sites fall behind. It's not just a patient problem. It becomes a trial problem.

Gamification helps by adding small touches that reinforce the right behaviors.

Here's how that looks in practice:

Medication Adherence

Patients who take their medicine on time see that progress build five days in a row. If they miss a day, the streak resets. This helps them stay consistent without needing reminders from staff.

This supports **ownership, progress,** and **avoidance.**

Data Entry (ePRO)

Daily symptom reports can feel repetitive. A simple progress bar that fills in with each entry and milestone feedback like “10 days complete” gives patients a reason to keep going.

This builds **accomplishment** and helps reduce drop-off over time.

Clinic Visits

When a patient attends all their visits in a cycle, they might see a message that says, “Thanks for staying on track.” No points. No prizes. Just proof that their time matters.

This reinforces **social connection** and **recognition**.

Personalization

Letting patients choose when they get reminders or how their app looks can make the experience feel more comfortable. These small choices lower resistance to daily tasks.

This supports **choice** and a feeling of control.

Real-Time Feedback

Every completed task triggers a checkmark, a small animation, or a simple “Well done.” These cues remind people that their actions count.

This strengthens **motivation** without adding noise.

How Gamification and ePRO Work Together to Improve Engagement and Data

Electronic Patient-Reported Outcome (ePRO) systems are now common across clinical trials. They're essential for capturing real-world data, like daily symptoms, medication intake, or quality-of-life updates directly from patients between site visits.

But as many clinical teams know, just having ePRO in place doesn't guarantee useful data.

Patients skip entries. Tasks become routine or confusing. Over time, digital diaries get ignored, and missing data starts to pile up. It's not because patients don't care. It's because the systems supporting them haven't kept pace with how people actually engage with digital tools in everyday life.

This is especially clear in decentralized and hybrid trials. While decentralized models make participation more flexible, they also place more responsibility on the patient. That makes the digital experience a critical part of how the trial runs.

Gamification strengthens the ePRO experience by guiding patients through their daily tasks in small, purposeful ways.

Here’s how gamification, when embedded directly into the ePRO system, helps:

- **Progress bars** give patients a visual sense of how far they’ve come
- **Milestones** recognize effort, such as completing 10 consecutive entries
- **Encouraging feedback** reinforces participation in the moment
- **Visual dashboards** make patients feel their contributions matter
- **Streak-based nudges** add gentle, positive pressure to stay consistent

These are small touches. But together, they help reduce friction, increase consistency, and improve how patients experience the trial, especially when site support is minimal or remote. This approach helps patients stick to your protocol.

And that’s where the real value lies: a better digital experience leads to better data and higher-quality inputs that your team can trust and use.

What Gamification Results Really Look Like

When clinical trial leaders talk about what makes or breaks a study, it's rarely just the technology. It's the patient experience.

That's why the results from gamification aren't just about numbers; they're about what happens when trial platforms feel built for humans, not just protocols.

In a Phase III trial for actinic keratosis, where the average participant age was 69, Replior's gamified ePRO system supported **94% diary compliance** and **93% retention**—figures that remained high across the full duration of the study.

Another Phase IV study using Replior's Trial Online platform, this time involving nine PROs per visit, saw retention climb from **90% to 97%** when gamified ePRO was introduced. With less missing data and fewer site follow-ups, the trial moved faster and more efficiently.

Clinical teams report the impact goes beyond metrics. As **Diego Herrera Egea, Director of Clinical Data & Digital Innovation at Almirall,** put it:

> *"Introducing gamification with Trial Online has improved the satisfaction of our patients and therefore increased the robustness of the database."*

When the experience improves, the data does too.

Gamification helped reduce:

- Missed entries that required manual site follow-up
- Inconsistent reporting tied to disengaged participants
- Site burden from repeated coaching or reminders

These results came from thoughtful design and tools that helped patients stay focused, follow the protocol, and understand the value of their contribution to the study.

This is what happens when the right behavioral cues are built into the tools participants already use. No extra apps. No complicated portal. Just better engagement that leads to cleaner, more consistent data.

And critically, these results held steady in long-term trials.

How to Collect Better Data Without Asking Patients to Do More

Gamification gives patients a clear, rewarding reason to stay involved in a study. But not every part of a trial needs patients to take action. Sometimes, the best support is something they barely notice.

That's why Replior's platform supports passive data collection alongside active participation through ePRO. Wearable sensors quietly gather real-world data in the background without asking patients to complete extra forms or follow additional instructions.

This dual approach is especially useful when patient-reported input is harder to collect. That includes people who may have trouble using digital tools regularly, patients managing advanced conditions, and studies that require frequent data points over long periods of time.

For example, Replior's scratch sensor can detect behaviors like nighttime scratching in patients with dermatologic conditions. Otherwise this data that would be difficult to capture manually. The UV sensor tracks cumulative sun exposure and sends warnings when patients approach their individual exposure limits based on skin type. These features improve safety, support protocol compliance, and add a layer of objective data to supplement what patients report.

The sensors work with the ePRO system to help trial teams view both active and passive inputs in one place. This makes it easier to build a complete, consistent picture of each patient's experience.

This is how engagement evolves—by making tasks clearer, more motivating, and sometimes by removing the task altogether. Gamification keeps patients invested. Passive sensors keep data flowing. Together, they support better science with less burden.

What Clinical Ops Teams Ask Us Most About Gamification

Clinical teams don’t ask if gamification is fun. They ask if it works, if it fits the protocol, and if it adds risk.

After supporting trials across different study types, lengths, and patient populations, Replior has seen these questions come up again and again. Here’s what we’ve learned from real use in the field.

Good tech isn’t enough. What matters is how it supports patients through their tasks.

In one dermatology study, the average patient was 69 years old. Still, 94% completed their eDiaries because the system was designed to be easy. Large buttons. Simple navigation. Reminders built in. With the right setup, tech comfort isn’t a blocker.

Device access doesn’t have to be a barrier.

For patients who don’t have their own smartphone or tablet, Replior provides devices directly. That way, no one is left out, and sites don’t have to manage extra logistics. It’s one less variable to track.

Gamification doesn’t distort the data. It improves it.

Some worry patients might just tap through tasks to earn rewards. But what we’ve seen is the opposite. When patients feel supported and see their progress, they stay more consistent. That means fewer gaps, fewer missed entries, and fewer protocol deviations.

And it works alongside sensors.

Replior also supports passive data collection through sensors that work with the ePRO. That gives sponsors an extra layer of objective data to support what patients report for a fuller, more dependable dataset.

Sites see the difference.

When patients stay involved, site teams spend less time chasing late entries or rescheduling visits. They can focus more on the study itself, not reminders or cleanup. Our partners report less back-and-forth and smoother day-to-day management.

It fits into existing protocols.

You don’t need to redesign a protocol to use gamification. Replior’s tools are modular. Teams can start with something small, like a progress bar or reminder and build from there based on patient response.

It’s built with compliance in mind.

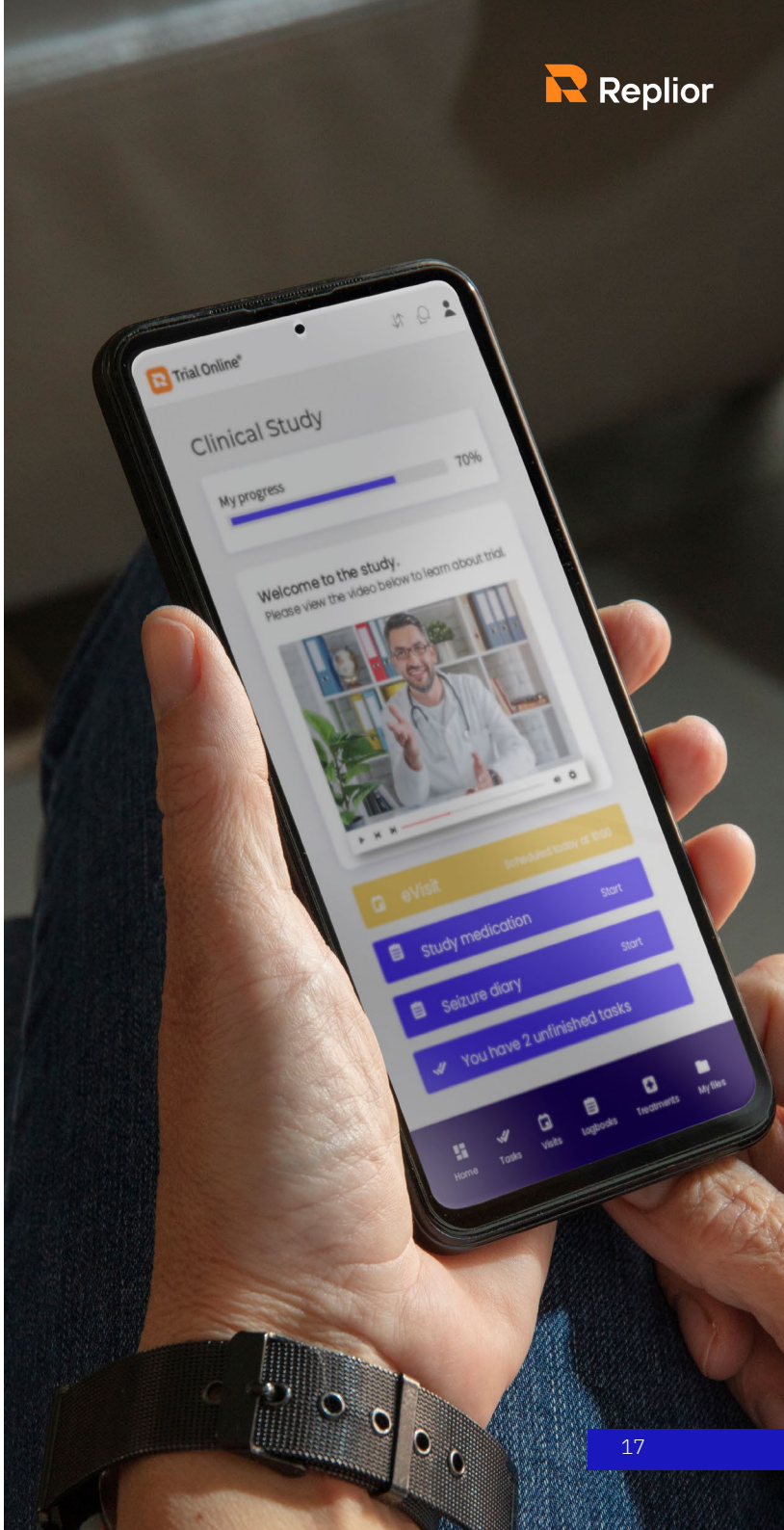
Everything in Replior’s platform is designed to meet global standards. HIPAA, GDPR, and FDA guidance are all factored in. Visual milestones and feedback messages support the protocol.

And it holds up in complex studies.

Replior has supported trials with tight schedules, high dropout risk, and long durations. In each case, gamification helped improve retention and reduce the need for manual follow-up. Patients weren’t just checking boxes. They understood their role and felt connected to the outcome.

When you remove barriers and add support, patients stay engaged.

That’s what gamification does. It helps patients feel like they’re part of something without asking them to do more than they need to.



From Engagement to Execution: What Makes the Difference

Across hundreds of studies, clinical teams have seen what happens when patient engagement becomes part of the study design and not an afterthought.

Gamification works best when it builds structure, clarity, and momentum—not when it tries to entertain. When paired with passive sensors and accessible tools, it helps teams collect the kind of data regulators trust and that sites don't have to chase down.

This is how Replior thinks about the future:

- Tools designed to keep patients engaged throughout the trial
- Reliable data that reflects what patients report and what actually happens
- A platform proven in high-risk, high-complexity studies

If you're rethinking how your trials engage patients, we're ready to help.

Want to see how this works in your next study?

Let's walk through how this has worked in studies like yours—and what it could look like in your next protocol.

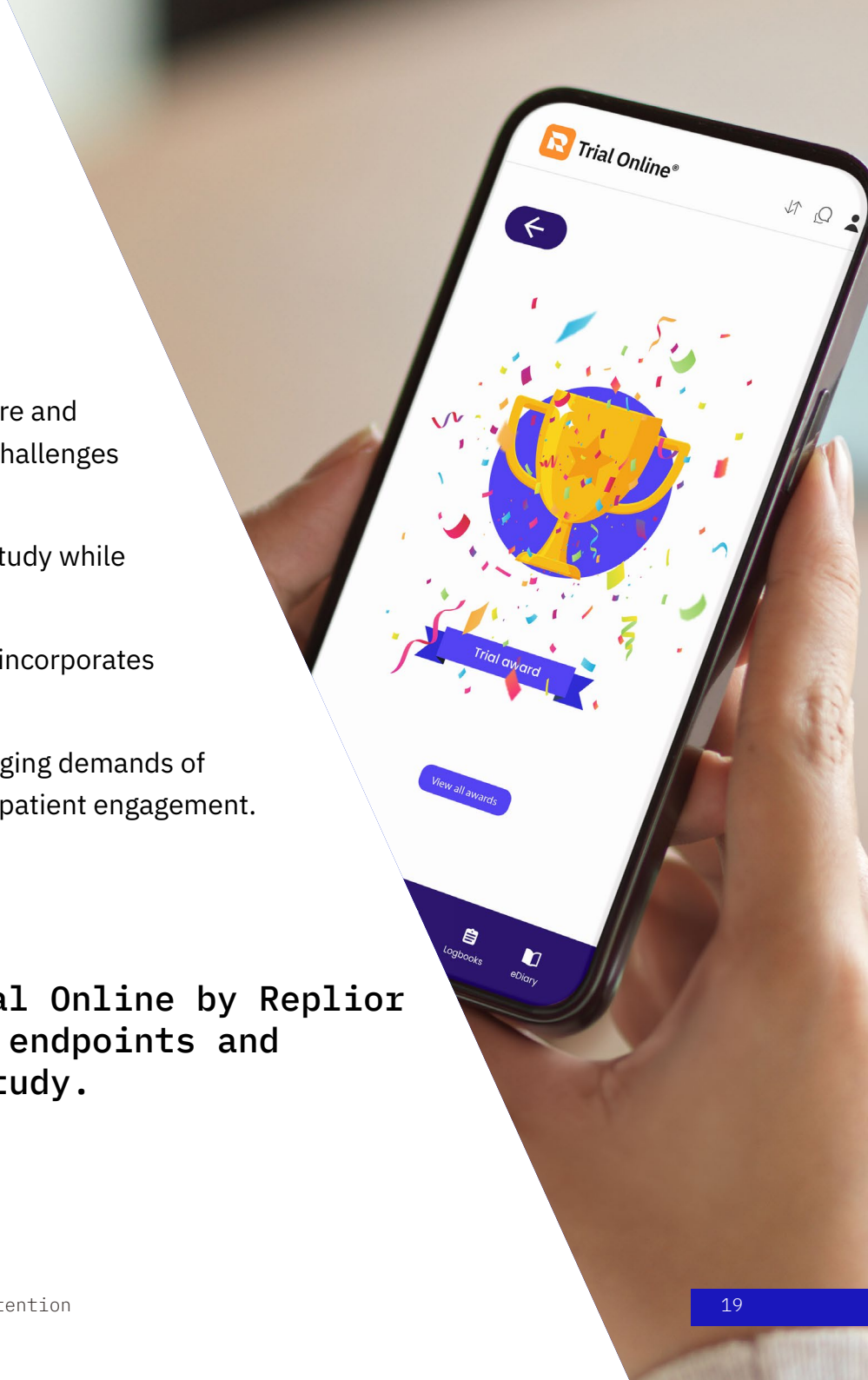
Replior

Replior specializes in integrated data collection solutions, combining hardware and software to collect both subjective and objective data, addressing common challenges in clinical trials.

Modular and customizable, Trial Online meets the unique demands of each study while ensuring data accuracy and efficiency.

To enhance patient retention and humanize the trial experience, Trial Online incorporates innovative gamification techniques, making participation more engaging.

Our team is dedicated to continually evolving our solutions to meet the changing demands of clinical trials, working closely with customers to enhance data precision and patient engagement.



Contact us today to learn how Trial Online by Replior can be customized to meet specific endpoints and patient retention needs of your study.

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