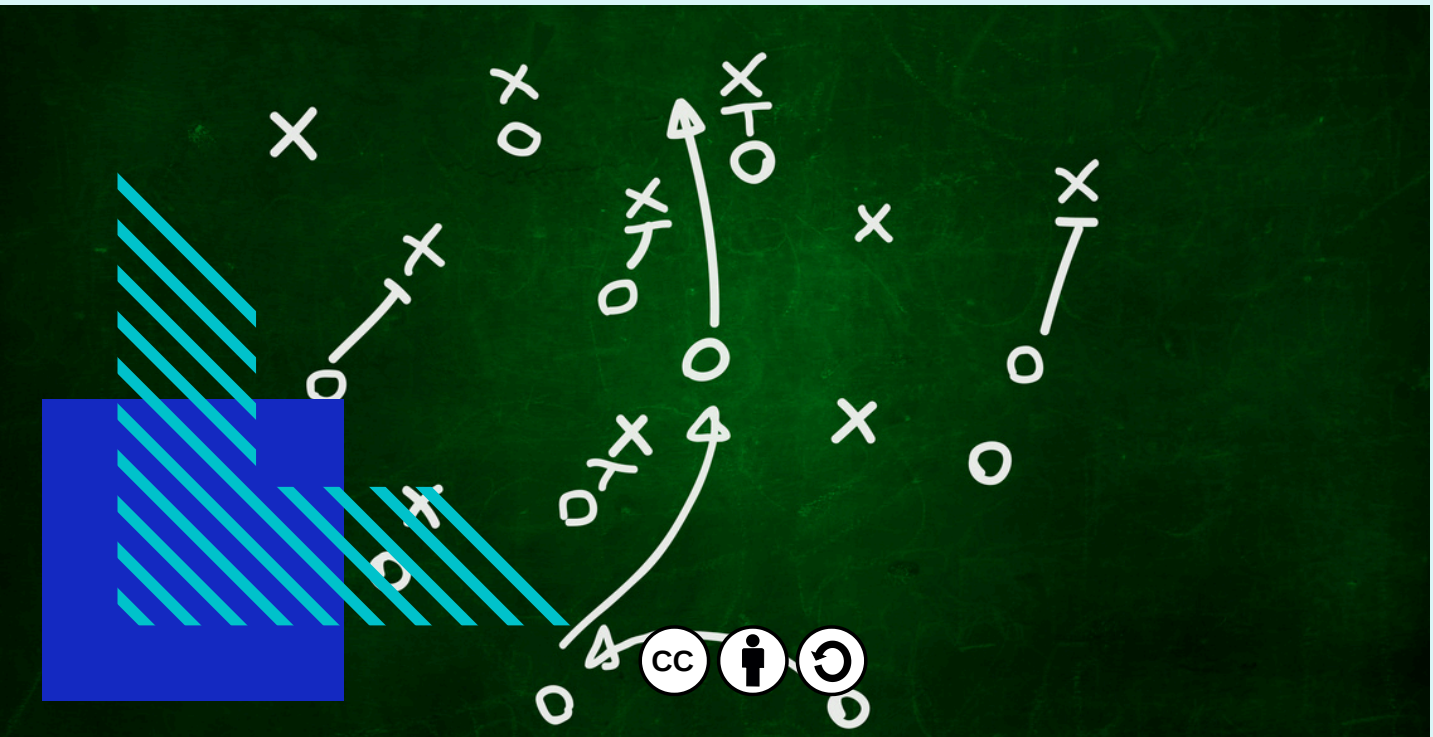
D2.4 Implementation Guide for Sports Technology Integration

Project Output4: Implementation Guide for Sports Technology Integration

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Executive summary

This guide is Project Output4 (as named in the Grant Agreement) of the TalentTECH project, co-funded by the European Union under the Erasmus+ Sport programme (Grant Agreement No. 101235717). It is a step-by-step manual for football academies, coaches and scouts on how to implement and use three kinds of sports technology: AI tools for scouting and player evaluation, wearable sensors for monitoring, and video analysis systems.

The guide follows the Grant Agreement. For each technology it gives technical setup instructions, best practices for data interpretation, recommendations for integrating the tool into training routines, and troubleshooting tips. It is written for small and medium academies with different levels of digital readiness. The players they work with are young, and many are minors.

The guide rests on three points:

- **Start with a problem.** Chapter 2 helps you decide what you need before you buy anything.
- **Numbers describe; people decide.** AI scores, load numbers and video tags are inputs. A qualified person takes every decision about a young player.
- **Same routine every time.** Most data problems come from a missed step. The numbered procedures in chapters 3 to 5 and the checklists in Annex A keep the routine stable.

The guide is published under a CC BY-SA 4.0 licence as a printable PDF and a web page (https://talenttech-project.github.io/d2-4/). Four short video walkthroughs accompany the guide (section 1.4).

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INTRODUCTION

1 Introduction

1.1 Purpose and scope of the guide

This guide shows you how to put three technologies to work in a football academy for player evaluation and performance enhancement:

- **AI tools** that support scouting and player evaluation (chapter 3);
- **wearable sensors** for monitoring load, health and injury prevention (chapter 4);
- **video analysis systems** for tactical and technical evaluation (chapter 5).

It is a manual. The theory behind each technology is in the TalentTECH curriculum (D2.1) and the e-learning modules (D2.2). Real examples from clubs are in the case studies (D2.3). This guide tells you what to do, in what order, and how to check that it worked.

1.2 Target audience

The guide is written for **football academies, coaches and scouts**. It also serves performance staff (fitness coaches, sports scientists), academy managers and coordinators, and analysts. The quick-start checklists at the end of chapters 3 to 5 are split by role.

We assume a small or medium academy with limited budget and staff time. Where a step costs money, the guide gives a *small-academy option*. Where a step touches player data, the guide points to the data protection rules in section 2.5 and Annex C. Technology should also serve female players and players with disabilities: fit, feedback and consent routines should be checked for every group you work with.

1.3 Relationship to other WP2 outputs

Output	What it gives you	How this guide uses it
D2.1 Curriculum	Five modules, learning outcomes, roles	Chapters 3, 4 and 5 map to Modules 1, 3 and 4; Module 2 (performance analytics) is covered by chapter 6. Chapter 9 is the practical form of the curriculum's final assignment, the academy technology-integration plan.
D2.2 E-Learning Modules	Screen-by-screen course content	D2.2 points learners to this guide for technical setup and configuration. The guide does not repeat D2.2 content.
D2.3 Case Studies	Twelve cases from research and practice	The cross-case lessons in D2.3 (start with a problem; humans decide; check missing data; compare players with their own baseline; keep outputs short; safeguard minors) shape chapters 2, 6 and 7.

1.4 How to use this guide

- **Printable PDF.** Print chapters 3 to 5 and Annex A for use at the training ground.

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- **Web version.** The same content as one web page, for reading on a phone or tablet, with the videos built in: https://talenttech-project.github.io/d2-4/
- **Video walkthroughs.** Four short videos (2–4 minutes) show the steps of chapters 2 to 5. A link and a QR code are at the start of each chapter.
- **In a workshop.** Each technology chapter can run as a 90-minute session: read the overview, walk through the setup steps with the real equipment, then fill in the role checklist.
- **Online.** Read one chapter, then do the matching D2.2 module and its applied task.

Diagrams and screenshots. All interface drawings in this guide are schematic. They show the kind of screen you will meet, not a specific supplier's software. Menus and names differ by product.

Times and quantities. Some times and quantities in the guide have no citation, for example a 20-minute meeting, two or three clips per player, or a report within two days. These are the authors' practical starting values, not evidence-based thresholds. Adapt them to your academy.

Illustrations. The diagrams and interface drawings were produced for this guide as vector graphics by the project team with AI assistance (Anthropic Claude); no image was taken from a product or a third party. Each is recorded in the project's image provenance file.

Product names. Where the guide names a product, it is an example within a category, taken from public supplier documentation. TalentTECH does not endorse any product.

1.5 Scope and limitations

- The guide is vendor-neutral. Setup steps are generic. Where a step differs by product, the guide says "follow your supplier's manual".
- The guide is not legal advice. Data protection rules differ by country, and the guide says where to check. Partners in Türkiye are under Law No. 6698 on the Protection of Personal Data (KVKK), not the EU General Data Protection Regulation (GDPR).
- The guide is not medical advice. Injury and return-to-play decisions belong to qualified medical staff.

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PREPARATION

2 Before you start: preparing the academy

The D2.3 case studies show that academies which started with a clear problem, a named data owner and a realistic budget kept using their tools; others did not. The lesson: technology projects often fail before the first device is switched on. This chapter covers the five decisions to take first.



VIDEO WALKTHROUGH

Video 1 of 4: Before you start: preparing the academy (2:16)

https://zenodo.org/records/24012675/preview/D2.4_Video1_Before-you-start_EN.mp4

2.1 Start with a specific problem, not with the technology

Write down the one problem you want to solve this season. Examples:

- "Our U15 scouts rate the same player very differently." (chapter 3)
- "We do not know how hard last week was for each player." (chapter 4)
- "Players do not understand our feedback on positioning." (chapter 5)

Then write how you will know it is solved. Use something you can count: for example, two scouts agreeing more often, or every player having a load record for every session. D2.3 (section 14.3) draws the same lesson from the Lithuanian cases: begin with a problem and an implementation plan, not with a purchase.

CHECK

Your problem statement fits in two sentences, and a colleague can repeat it back to you.

2.2 Academy digital-readiness self-assessment

Answer the seven questions in Annex B before choosing any tool. They cover people, time, equipment, internet, data handling, budget and player and parent trust. The answers place your academy in one of three bands:

Band	Typical situation	Suggested start
Starting	No data owner named; no stable laptop or Wi-Fi at the ground; no consent routine	Session-RPE, a player's effort rating (section 4.1), a phone on a tripod for video (section 5.2), consent routine first (Annex C)
Developing	One person with time; basic equipment; some consent forms	One technology, one age group, one season
Established	Data owner and backup named; stable equipment; written data rules	Add a second technology and combine the data (chapter 6)

The bands are a planning aid, not a score. Many academies are "starting" in one row and "established" in another.

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2.3 Budget, staff time and choosing sustainable tools

Staff time is the cost academies forget to budget; licence fees are only the visible part. For each tool, estimate the hours per week for setup, data download, checking and reporting, and name who will do them. D2.3's practitioner cases found that budget and the coach's own preferences decide whether a tool is adopted, and that planning for staff time matters as much as paying for licences.

Rules for a small academy:

- **Choose tools you can sustain for three seasons.** Advanced features you cannot keep paying for are worth less than a tool you still use in season three.
- **Remove repetitive paperwork first.** D2.3 (Table 14, Cases 8 and 9) draws the lesson "admin first, performance tech second": remove repetitive paperwork before adding sensors or AI. If staff are drowning in admin, a performance tool will not be used.
- **Pilot before you commit.** One age group, one season, then decide (section 7.4).

> **€ SMALL-ACADEMY OPTION**
>
> Each technology chapter opens with a no-cost or low-cost route: session-RPE instead of sensors, a phone camera instead of an automated camera, and a structured scouting template instead of an AI tool. Each builds a routine you will need later anyway.

2.4 Roles and responsibilities

Name one person for each role below. One person can hold several roles in a small academy, but each role needs a name and a backup. Write the names in your integration plan (chapter 9).

Role	Responsible for
Data owner (per tool)	Setup, download, quality check, storage and access
Interpreter	Turning numbers into a short report with one clear message (section 6.2)
Feedback lead	What players and parents are told, and how (section 7.3)
Decision maker	Selection, load and return-to-play decisions. Always a person, never a tool (section 2.5)
Data protection contact	Legal basis, consent, retention, DPIA (section 2.5, Annex C). Your organisation's DPO if you have one

D2.3 (section 14.3) lists "assign responsibility for data quality, interpretation, feedback and decisions" as a shared lesson of the Lithuanian cases.

2.5 Data protection and safeguarding principles for youth players

Every tool in this guide collects personal data about young players. The rules below are principles. Annex C turns them into a checklist. This section is not legal advice: confirm each point with your data protection officer (DPO) or legal adviser, and with your national data protection authority's guidance.

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1. **Follow the GDPR principles.** Data must be processed lawfully, fairly and transparently, for clear purposes, limited to what is needed, kept accurate, kept no longer than necessary, and kept secure. The academy must be able to show it does this (Regulation (EU) 2016/679, Art. 5).
2. **Decide the legal basis first.** Consent is one of six legal bases. Decide and document the basis for each use of data before you start (GDPR, Art. 6). If a player or parent feels that refusing a sensor or a camera would hurt their place in the squad, consent may not be "freely given". Ask your DPO or data protection contact (section 2.4) which basis fits, and make withdrawal as easy as giving consent (EDPB, 2020a).
3. **Involve parents for minors.** The GDPR sets a "digital age of consent" of 13 to 16, depending on the country. It applies only to online services offered directly to children, for example a player app the child signs up to. All other processing needs its own legal basis and, for minors, normally involves parents. Check the age in your country with your national data protection authority. Verify parental consent in a proportionate way. When a player reaches the national age, tell them they can confirm or withdraw the consent their parents gave (EDPB, 2020a; European Commission, n.d.).
4. **Treat sensor data as health data.** The GDPR's definition of health data is broad. Physiological measurements can count as health data whatever device produced them (GDPR, Art. 4(15), Art. 9; Article 29 Working Party, 2015). Heart-rate and other physiological data collected over a season are likely to be health data. Identify an Article 9 exception (for example explicit consent) with your DPO before collecting it.
5. **Do a data protection impact assessment (DPIA) when in doubt.** Art. 35 GDPR requires a DPIA for high-risk processing, and national authorities publish lists. In a survey of over 100 sports clubs by Ireland's data protection authority, 9% had done a DPIA and 56% had no retention schedule (DPC, 2024).
6. **A person takes every decision.** Under Art. 22 of the General Data Protection Regulation (GDPR), people have a right not to be subject to decisions based solely on automated processing. Recital 71 adds that such decisions should not concern a child. So an AI tool must not decide on its own whether a young player is selected or released: a qualified person reviews the evidence and takes the decision. Chapter 3 applies this rule to scouting tools.
7. **Explain it to players in simple words.** What is collected, why, who sees it, and how long it is kept (GDPR, Art. 12–13).
8. **Video: analysis is not publication.** Ordinary match video is personal data but not automatically biometric data; if a tool uses face recognition, stricter rules apply (EDPB, 2020b). Before posting any clip of a youth player online, have a clear legal basis (usually parental consent), say where it will appear and for how long, and allow withdrawal (DPC, n.d.).
9. **Secure the data.** Use player codes instead of names where you can, protect accounts with strong passwords, encrypt laptops and phones, keep backups, and check security regularly (GDPR, Art. 32). Where a supplier stores the data, the contract should say who is controller, who is processor and where the data is kept.

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10. **Know which law applies.** Partners in Türkiye follow Law No. 6698 on the Protection of Personal Data (KVKK), which also treats health data as a special category (KVKK, 2016). In this guide, KVKK refers to the law; the authority of the same name publishes guidance on it.

WATCH OUT: AI TOOLS AND THE EU AI ACT

An academy that uses an AI scouting tool is a "deployer" under Regulation (EU) 2024/1689 (the AI Act). Article 4 asks deployers to take measures to support AI literacy among the staff who use the tool. Article 4 has applied since 2 February 2025; its wording was amended in July 2026 by Regulation (EU) 2026/1744. The AI Act does not list football scouting as a high-risk use. Some functions, such as emotion recognition or biometric identification, are regulated, so check what a tool does before you buy it. Do not describe scouting AI as "high-risk" unless legal advice confirms it.

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TECHNOLOGY CHAPTER

3 AI tools for scouting and player evaluation

This chapter shows how to set up an AI-supported scouting tool, read its outputs and use them alongside your scouts' own judgement. It applies to tools that rank or score players from data, and to the data you feed them.



VIDEO WALKTHROUGH

Video 2 of 4: AI tools for scouting and player evaluation (4:24)

https://zenodo.org/records/24012675/preview/D2.4_Video2_AI-scouting-tools_EN.mp4

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3.2 Technical setup 11
3.3 Interpreting the outputs 13
3.4 Scouting and training routine 14
3.5 Troubleshooting 14
3.6 Checklist by role 15

3.1 Overview: what AI tools can and cannot do

An AI scouting tool learns patterns from past data, for example which players an academy selected in earlier seasons, and applies them to new players. Its output is usually a score, a ranking or a shortlist. For the background, see Module 1 of D2.1 and D2.2, and Cases 1, 4 and 5 in D2.3.

Two limits matter most. First, even a well-built model predicts only moderately well: in a professional German academy, the best model reached an AUC (area under the curve) of 0.69, where 0.5 is chance and 1.0 is perfect (Altmann et al., 2024). Second, most published talent-identification models have not been tested on outside data, and many have a high risk of bias (Tang et al., 2026). A tool trained on past selections can learn the biases in those selections.

€ SMALL-ACADEMY OPTION

No AI tool? Use a **structured scouting template**: the same five to eight criteria, scored the same way, for every player. It builds the consistent data an AI tool would need later, and it addresses a problem named in section 2.1: two scouts rating the same player differently.

3.2 Technical setup: step by step

GA ▸ TECHNICAL SETUP INSTRUCTIONS

BEFORE YOU START

- A written problem statement (section 2.1) and a named data owner (section 2.4).
- Your player records: at least name or code, date of birth, position, and the assessments you already make.
- A data protection check: scoring minors may need a DPIA (section 2.5, Annex C).
- Access details for the tool and a laptop with the supplier's software or web app.

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ONCE, BEFORE THE FIRST SEASON

1. **Ask the supplier three questions in writing.**
   WHY: How was the model validated? On how many players? On data from another club or season? Be cautious if a supplier reports very high accuracy and cannot answer these (Tang et al., 2026).
   ✓ **CHECK:** you have the answers on file, in writing.

2. **Check what the tool actually does.**
   WHY: If it uses face recognition, emotion recognition or other biometric functions, stricter rules apply under the GDPR and the AI Act. Ask your DPO or data protection contact before you buy (section 2.5).

3. **Give the staff who will use it a short AI-literacy briefing (about 30 minutes).**
   WHY: The AI Act asks deployers to support AI literacy (Regulation (EU) 2024/1689, Art. 4). Cover what the score is, what it is not, and who decides.

4. **Set up player records with a code, date of birth and, where you can, a maturity estimate.**
   WHY: Without birth date and maturity data, you cannot check the tool for relative age and maturation bias (section 3.3). Use codes instead of names in the tool where possible (section 2.5).

5. **Write a one-line definition for every data field you enter.**
   WHY: A GPS sprint speed and a stopwatch sprint speed are different numbers, so the tool cannot compare them.

6. **Record the tool version and the date in your log.**
   WHY: When the supplier updates the model, scores can shift. A dated note explains it.

EVERY SCOUTING CYCLE

7. **Enter or import the new assessments.**
   WHY: Enter data soon after each observation, the same way every time.

8. **Check data completeness before you look at any score.**
   WHY: A high score on a player with half the fields empty is not comparable with a high score on a complete record (Figure 3.1, callout 2).

9. **Generate the shortlist and send it to a named scout for review.**
   WHY: The tool only screens. A person reviews every flagged case and takes the decision (Tang et al., 2026).
   ✓ **CHECK:** each player on the shortlist has a recorded human decision (Figure 3.1, callout 4).

10. **Once a season, compare the shortlist by birth quarter and maturity status.**
    WHY: See section 3.3. If early-born or early-maturing players dominate, the tool may be reproducing bias.

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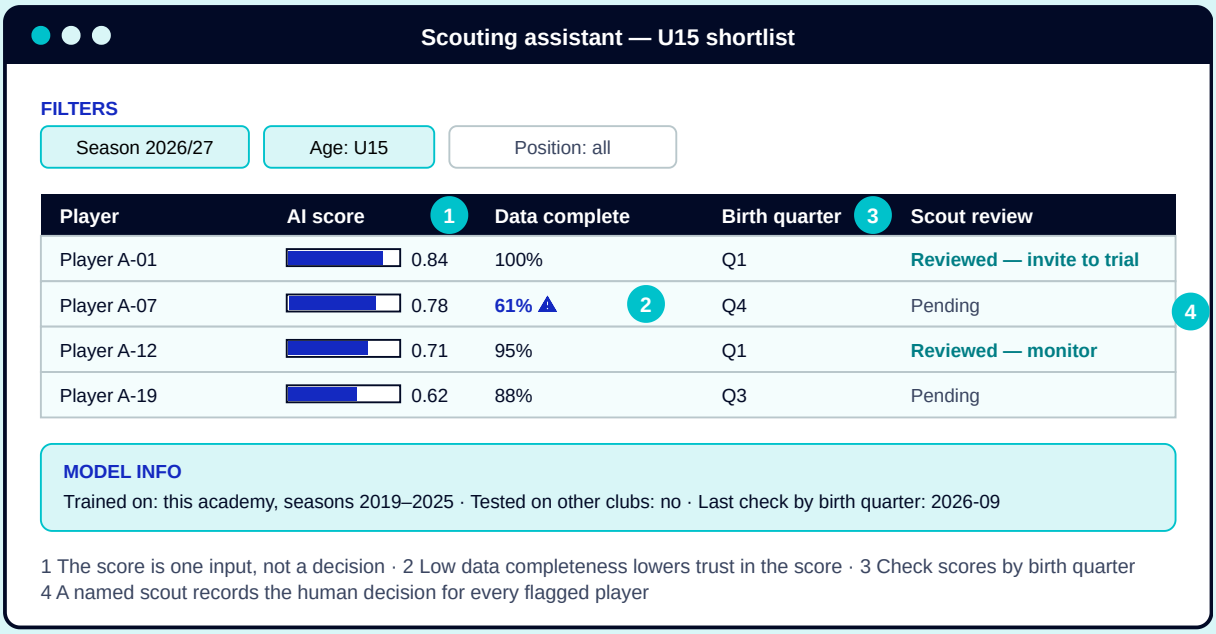


Figure 3.1 A shortlist screen in a typical AI scouting tool. Illustrative interface, not a real product. The columns to look for are data completeness, birth quarter and the human review status.

3.3 Interpreting AI outputs

GA ▸ BEST PRACTICES FOR DATA INTERPRETATION

1. **A score is one input.** Combine it with live observation and the scout's judgement (Altmann et al., 2024; Tang et al., 2026). The D2.3 practitioner cases (Cases 4, 5 and 7) reached the same conclusion: the data narrows the choice and people decide.
2. **Missing data is a hidden bias.** Before trusting a ranking, check whose data is absent. D2.3 (Cases 4 and 7) warns that data supplied by interested parties, such as agents, can distort a shortlist.
3. **Check for the relative age effect.** Players born early in the selection year are more likely to be selected, especially in adolescence; a 2023 meta-analysis of 90 football studies confirms the effect is strongest in adolescence and at higher levels (Cobley et al., 2009; Bozděch et al., 2023). An AI tool trained on past selections will learn this.
4. **Maturation is a separate bias.** Relative age and biological maturity are two different effects, and a model can learn both. Check outputs by birth quarter and by maturity status (Hill et al., 2020). Approaches such as bio-banding exist, but evidence on their effects is still developing.
5. **Ask about calibration.** A score of 0.8 should mean that about 8 in 10 such players were selected in the test data. If the supplier cannot explain how the probabilities were calibrated, treat the number as a rank, not a probability (Tang et al., 2026).

WATCH OUT: AUTOMATED DECISIONS ABOUT CHILDREN

Do not let the tool decide on its own whether a young player is selected or released. Section 2.5, principle 6, explains the legal basis (GDPR Art. 22 and Recital 71). A qualified person reviews the evidence, takes the decision and records it (Figure 3.1, callout 4).

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3.4 Using AI tools in the scouting and training routine

GA ▸ RECOMMENDATIONS FOR INTEGRATING TOOLS INTO TRAINING ROUTINES

- **Use the tool to build shortlists.** Let it narrow 60 names to 15, then watch those 15 live.
- **Fix a review slot.** One weekly shortlist review (about 20 minutes) where the named scout records a decision for every flagged player. Table 7.1 places it on MD-2 (two days before the match; see section 7.1), separate from the planning meeting.
- **Feed back to coaches in one line per player.** "Flagged by the tool; watched twice; invite to trial" is enough. D2.3 (Cases 5, 6 and 8) found that players and coaches use short outputs and ignore long ones.
- **Keep the structured template running alongside.** Your own consistent assessments are the data the tool needs, and your fallback if you stop using it.
- **Tell players and parents what the tool is.** In simple words: it suggests who to watch, and the scout decides (section 2.5).

3.5 Troubleshooting

GA ▸ TROUBLESHOOTING TIPS

Table 3.1 Common AI tool problems and what to do

Problem	Likely cause	What to do
Two scouts disagree with the tool on most players	The tool was trained on a different level, country or age group	Ask the supplier what the model was trained on (step 1). Use the tool only for the group it was built for.
Shortlist is almost all early-born players	Relative age effect in the training data	Run the birth-quarter check (step 10). Review late-born players manually. Raise it with the supplier.
Scores changed for everyone overnight	Model or software update	Check your log (step 6). Do not compare scores across the update.
A player with little data has a high score	Missing fields filled by default values	Check completeness (step 8). Do not act on scores from incomplete records.
Coaches ignore the shortlist	Output too long, or arrives too late	Send one line per player, before the next training session (section 3.4).
Parents ask what the "score" means	No explanation given at the start	Use the one-sentence explanation in section 3.4 and the information points in Annex C.

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3.6 Quick-start checklist by role

COACH

- ☐ Read the one-line scout note for each flagged player.
- ☐ Give the scout your own observation after each session.
- ☐ Never cut or promote a player on a score alone.

SCOUT

- ☐ Record a decision for every flagged player, every week.
- ☐ Watch late-born and late-maturing players on purpose.
- ☐ Keep the structured template going.

PERFORMANCE STAFF

- ☐ Supply birth dates and maturity estimates to the data owner.
- ☐ Define each physical field once, in writing.
- ☐ Flag data that comes from a different system.

ACADEMY MANAGER

- ☐ Get the supplier's validation answers in writing.
- ☐ Confirm the DPIA question with the DPO (Annex C).
- ☐ Run the 30-minute AI-literacy briefing for staff.

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TECHNOLOGY CHAPTER

4 Wearable sensors for monitoring, health and injury prevention

This chapter shows how to set up wearable sensors, read the data they produce and use them in a normal training week. It covers GPS vests with motion sensors and heart-rate monitors.



VIDEO WALKTHROUGH

Video 3 of 4: Wearable sensors for monitoring, health and injury prevention (4:04)

https://zenodo.org/records/24012675/preview/D2.4_Video3_Wearable-sensors_EN.mp4

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4.1 Overview: what wearable sensors measure

A GPS vest holds a small unit (the electronic module) on the player's upper back. The unit combines satellite positioning (GPS) with motion sensors such as an accelerometer (often grouped as an IMU, inertial measurement unit). Satellite positioning gives distance and speed outdoors. Motion-sensor metrics, such as accelerations and impacts, can still be used indoors, where GPS is not reliable (Malone et al., 2017; Torres-Ronda et al., 2022). A chest strap measures heart rate, which shows how hard the body is working.

These numbers describe **external load** (what the player did) and **internal load** (how the body responded). For the background, see Module 3 of the TalentTECH curriculum (D2.1) and the e-learning modules (D2.2). For examples from real clubs, see Cases 2, 7 and 11 in D2.3.

€ SMALL-ACADEMY OPTION

No sensors yet? Start with **session-RPE** (RPE = rating of perceived exertion): after each session, each player rates how hard it was from 0 to 10. Multiply the rating by the session length in minutes. The method is validated and costs nothing (Haddad et al., 2017). See step 12 below.

4.2 Technical setup: step by step

GA ▸ TECHNICAL SETUP INSTRUCTIONS

BEFORE YOU START

- A set of numbered GPS units and vests in the right sizes, plus a charging dock.
- Heart-rate straps (optional), paired with the same software.
- A laptop or tablet with the supplier's software and an up-to-date player list.
- A data protection check: wearable data can be health data. Complete section 2.5 and Annex C first.

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ONCE, BEFORE THE FIRST SESSION

1. **Choose a system and check its test report.**
   WHY: FIFA's Quality Programme for Electronic Performance and Tracking Systems (EPTS) publishes test results for tracking systems. Tested providers are listed with a public test report (FIFA, n.d.). The programme does not promote specific products (FIFA, 2022).

2. **Give each player their own numbered unit.**
   WHY: Units differ slightly. The same unit every session keeps a player's data comparable over time (Malone et al., 2017).
   ✓ **CHECK:** the player list in the software shows one unit per player.

3. **Enter each player's maximum heart rate from a field test agreed with your medical staff.**
   WHY: An age-based estimate can be wrong for an individual. A measured maximum makes heart-rate zones mean the same thing for every player (Polar, 2023).

4. **Write down your speed zones and keep them all season.**
   WHY: Changing zones mid-season breaks comparisons. If you use individual zones, record how you set them (Malone et al., 2017).

5. **Record the unit model and firmware version in your log.**
   WHY: After an update, numbers can change slightly. A dated note explains a sudden jump (Malone et al., 2017).

BEFORE EVERY SESSION

6. **Charge units and straps the day before.**
   WHY: Follow your manual. One heart-rate system, for example, needs about 3 hours for a full charge (Polar, 2023).

7. **Create the session in the software and split it into drills.**
   WHY: Use the same naming pattern every time, for example date – age group – session type. Drill labels let you compare like with like (Figure 4.1).

8. **Fit the vest tightly so the unit sits on the upper back.**
   WHY: A loose unit bounces and adds false accelerations (Malone et al., 2017).
   ✓ **CHECK:** the unit does not move when the player jogs on the spot.

9. **Switch units on outdoors, away from buildings, and wait for satellite lock.**
   WHY: Waiting times differ by brand. One supplier advises 10–15 minutes; another 12 minutes the first time, then 30–60 seconds (Catapult, n.d.-a; STATSports, n.d.).

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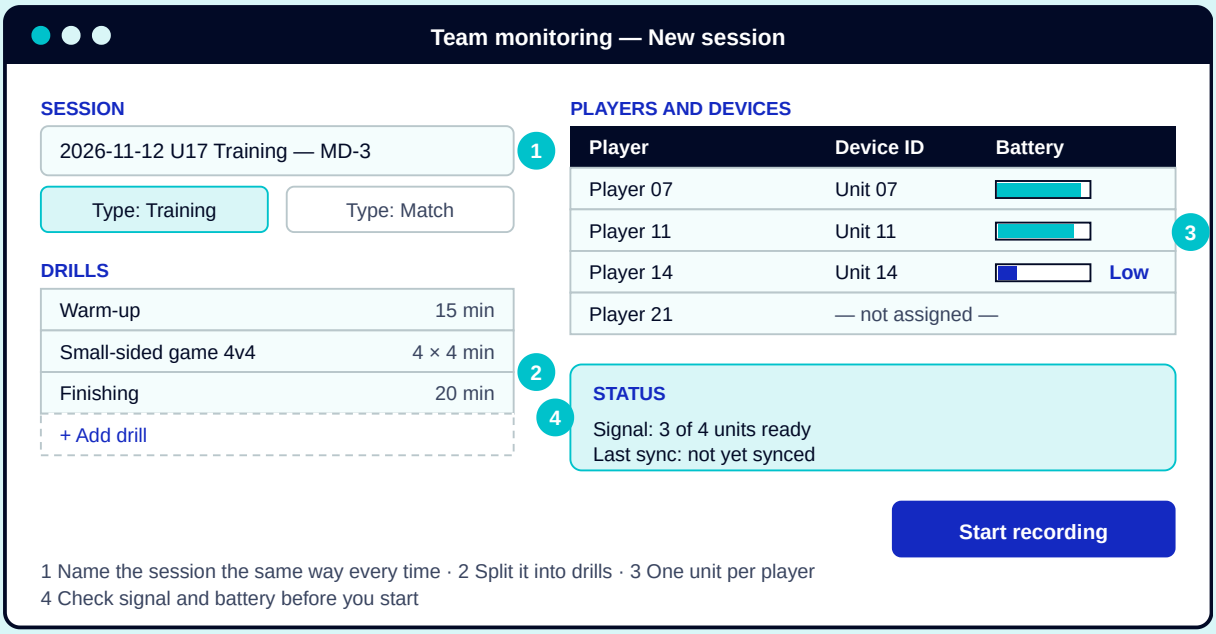


Figure 4.1 Session setup in typical wearable software. Illustrative interface, not a real product. Menus and names differ by supplier.

AFTER EVERY SESSION

10 **Download the data and check signal quality.**
WHY: Most software shows satellite count and a precision value (HDOP). Mark sessions with poor signal and do not compare them with normal sessions (Malone et al., 2017; Catapult, n.d.-b).

11 **Label indoor sessions as "indoor".**
WHY: GPS distance and speed are not reliable indoors. Use only motion-sensor metrics or heart rate there (Torres-Ronda et al., 2022).

12 **Ask each player for a session-RPE rating.**
WHY: Ask "How hard was the whole session?" (0–10) and multiply by the minutes, for example 4 × 87 = 348 arbitrary units. Teach players the scale before you start using it (Haddad et al., 2017).

13 **Put units back on charge and store the data under the agreed access rules.**
WHY: Only named staff should see the data (see Annex C).

4.3 Interpreting wearable data

GA ▸ BEST PRACTICES FOR DATA INTERPRETATION

Wearable numbers are estimates with a margin of error (Torres-Ronda et al., 2022). Use them to plan and adjust training, with five rules in mind.

1. **Compare like with like.** Do not compare numbers from different brands or systems, or from broadcast match tracking and your training vests, as if they were the same (Malone et al., 2017).
2. **Know what a "score" means.** Before you use a brand's own load score, ask the supplier how it is calculated (Torres-Ronda et al., 2022).

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3. **Read youth data in context.** Interpret load in relation to each player's age, growth stage and fitness (Torres-Ronda et al., 2022).
4. **Check plan against reality.** Compare the planned intensity (easy, medium, hard) with what players report. A large gap is a reason to talk, not to sanction (Haddad et al., 2017).
5. **Do not treat numbers as injury forecasts.** Load monitoring helps you plan training. It cannot reliably tell you which player will be injured, so expect false alarms and missed cases (Bahr, 2016).

WATCH OUT: THE ACUTE:CHRONIC WORKLOAD RATIO

Some software shows an "acute:chronic workload ratio" (ACWR) as a red flag for injury. Do not use it that way. Researchers found conceptual and statistical problems with the ratio and have recommended that it be dropped (Impellizzeri et al., 2020; Impellizzeri et al., 2021).

NOTE ON INJURY-PREDICTION MODELS

Some studies report promising injury-risk models built from GPS data, for example at a Polish professional club (Piłka et al., 2023; D2.3, Case 2). Results from one club's data need independent testing before they are trusted in a youth academy.

4.4 Using wearables in the training week

GA ▸ RECOMMENDATIONS FOR INTEGRATING TOOLS INTO TRAINING ROUTINES

- **Same routine every time.** Charge, fit, lock, record, download and check signal in the same order (section 4.2). A fixed routine reduces missing data.
- **Send a short report soon after the session.** Give a few key numbers per player and one clear message (Torres-Ronda et al., 2022).
- **Name one data owner.** This person downloads, checks and shares the data. Name a second person as backup.
- **Link it to the plan.** Use the numbers when you plan the next sessions, not only when you review the last one. Chapter 7 shows a sample weekly cycle for all tools together.

4.5 Troubleshooting

GA ▸ TROUBLESHOOTING TIPS

Table 4.1 Common wearable problems and what to do

Problem	Likely cause	What to do
Distance and speed missing or far too low	No satellite lock, or the session ran with an indoor profile	Check the session profile (Polar, n.d.). Next time, switch units on outdoors and wait for lock (step 9).
Numbers look odd for one session	Poor satellite signal near stands or buildings	Look at the signal-quality indicators (Catapult, n.d.-b). Mark the session and leave it out of comparisons.
Heart-rate strap shows no signal	Dry electrodes, loose strap or lost Bluetooth pairing	Wet the electrodes, tighten the strap, check it is the right way round, check Bluetooth, then pair it again (Polar, n.d.).

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Problem	Likely cause	What to do
Sudden change in all players' numbers	Firmware or software update, or a changed speed-zone setting	Check your log for the update date and the zone settings (steps 4–5). Do not compare across the change without a note.
One player's data does not match their effort	Wrong unit or loose vest	Check the unit number against the player list and check the fit (steps 2 and 8).
Unit runs out during the session	Not charged, or battery ageing	Charge the day before (step 6). Replace units that repeatedly fail.

4.6 Quick-start checklist by role

COACH

- ☐ Plan intensity (easy, medium, hard) for each drill.
- ☐ Agree drill names with the data owner.
- ☐ Use the short report when planning the next session.

SCOUT

- ☐ Use physical data only from the same system and season.
- ☐ Read youth data in light of age and growth stage.
- ☐ Never rank players on one physical number alone.

PERFORMANCE STAFF

- ☐ Keep the unit list, zones and firmware log up to date.
- ☐ Check signal quality after every session.
- ☐ Collect session-RPE from every player after each session.

ACADEMY MANAGER

- ☐ Confirm the data protection check (Annex C) is complete.
- ☐ Name a data owner and a backup.
- ☐ Budget for charging, spare vests and replacement units.

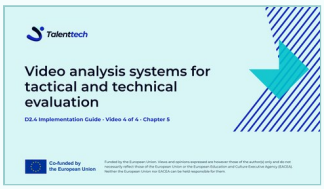
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TECHNOLOGY CHAPTER

5 Video analysis systems for tactical and technical evaluation

This chapter shows how to record training and matches, tag what matters, and turn the footage into feedback that young players use. It applies to a phone on a tripod as much as to an automated camera.



VIDEO WALKTHROUGH

Video 4 of 4: Video analysis systems for tactical and technical evaluation (3:56)

https://zenodo.org/records/24012675/preview/D2.4_Video4_Video-analysis_EN.mp4

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5.1 Overview: what video analysis is used for in an academy

Academies use video for three things: reviewing team tactics, evaluating individual technique and decisions, and giving players feedback they can see. Systems range from a phone and free software to automated cameras that follow play and upload to the cloud. For the background, see Module 4 of D2.1 and D2.2, and Cases 3, 8, 10 and 12 in D2.3.

The hard parts are a stable camera position, written definitions for what you tag, and feedback that players accept. The setup steps below are built around them.

€ SMALL-ACADEMY OPTION

A phone on a tall tripod at the halfway line, plus free video software, covers all twelve steps below. Add the automated camera later, once the routine works.

5.2 Technical setup: step by step

GA ▸ TECHNICAL SETUP INSTRUCTIONS

BEFORE YOU START

- A camera (phone, camcorder or automated camera) and a tripod as tall as you can safely use.
- Enough storage: a full match in HD is several gigabytes. Check your device's free space and your cloud plan.
- Video software for tagging and clipping, on a laptop with the footage.
- Consent and information for players and parents, including whether clips are shared and where (section 2.5, Annex C).

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ONCE, BEFORE THE FIRST RECORDING

1. **Choose and mark a fixed camera position.**
   WHY: Film from as high as safely possible, near the halfway line, wide enough to see most players. One camera maker's example: halfway line, 3–5 m from the touchline, with all four corners of the playing area in view (Veo, n.d.-a). Use the four corners as your framing check (step 7). Mark the spot (Figure 5.1).

2. **Write a one-line definition for every tag you will use.**
   WHY: For example: "Long pass = more than 25 m" (Gong et al., 2019). "Press trigger = first defender closes within 2 seconds" is our own example. Without written definitions, two coaches tag the same match differently.
   ✓ **CHECK:** your tag list fits on one page and every tag has a definition.

3. **Test agreement between two coders.**
   WHY: Have two coders (any two staff who tag video) tag the same 15-minute segment and compare. Where they disagree, fix the definition, not the person (Gong et al., 2019).

4. **Set a naming pattern for files: date – age group – opponent or session type.**
   WHY: A fixed pattern lets you find a match weeks later.

5. **Decide who may see footage and where it is stored.**
   WHY: Internal analysis and publication are different uses with different legal bases (section 2.5). Store footage under the agreed access rules.

EVERY RECORDING

6. **Charge the camera and clear storage the day before.**

7. **Set up at the marked position and check the frame.**
   ✓ **CHECK:** all four corners of the playing area are in view before kick-off.

8. **Record the whole session or match without stopping.**
   WHY: Gaps make timeline tags useless.

9. **Upload or copy the file the same day and name it (step 4).**
   WHY: A stuck upload is the most common video problem (section 5.5).

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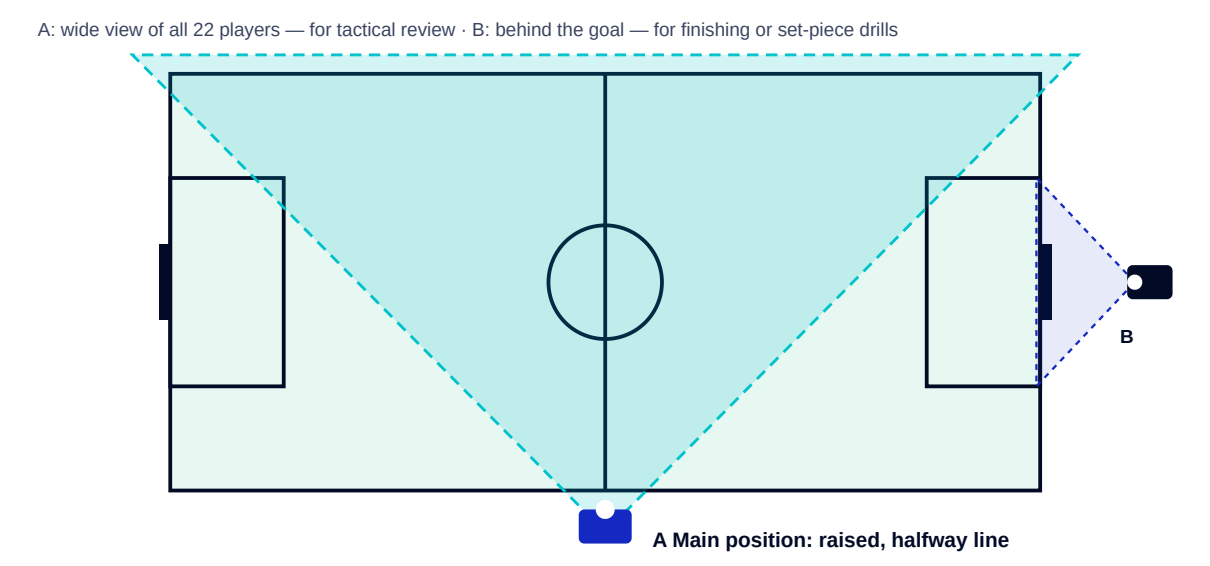


Figure 5.1 Camera positions. A: main position, raised, at the halfway line. B: behind the goal, for finishing or set-piece drills.

AFTER EVERY RECORDING

10 **Tag the footage using your defined tag list.**
WHY: Tag only what you defined (step 2). Add new tags only after writing a definition (Figure 5.2).

11 **Export two or three short clips per player, mostly positive.**
WHY: Players respond to short, individual, mostly positive clips and switch off during long critical replays (Middlemas & Harwood, 2018). D2.3 (Cases 5, 6 and 8) found that players get 2–3 minutes or 3 clips; staff get the full report.

12 **Review the clips with the player within a few days.**
WHY: Let players pick or comment on clips. Never use video to punish (Middlemas & Harwood, 2018).

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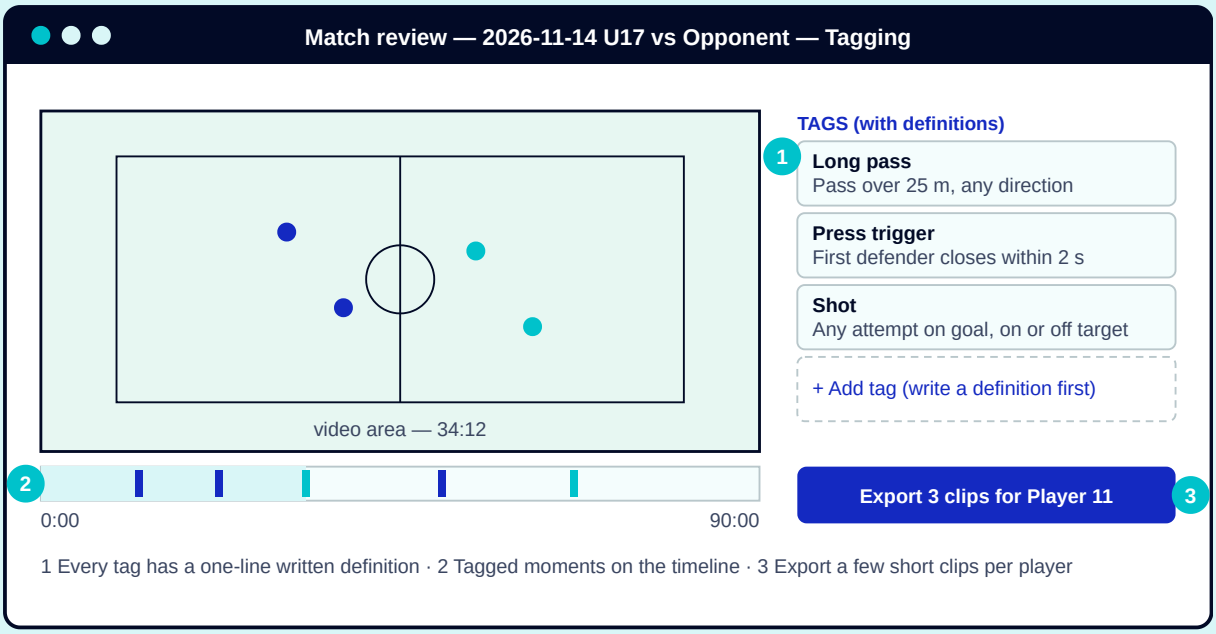


Figure 5.2 A tagging screen in typical video software. Illustrative interface, not a real product. Each tag carries its written definition.

5.3 Interpreting video: consistent criteria and agreement between coders

GA ▸ BEST PRACTICES FOR DATA INTERPRETATION

1. **Count only what you defined.** A count of "good decisions" means nothing without a written definition of a good decision. Keep the tag list short and stable through the season.
2. **Check agreement regularly.** Repeat the two-coder test (step 3) once a season, and whenever a new person starts tagging (Gong et al., 2019).
3. **Compare the player with their own earlier footage.** Three clips from October next to three from March show development better than a comparison with a teammate (D2.3, Cases 6 and 7).
4. **Keep the full analysis for staff.** The player sees the few clips; the coaching team sees the tagged timeline. Do not hand a 14-year-old a 90-minute review.
5. **Automated statistics are still counts.** An automated camera's "passes" or "sprints" are produced by rules you did not write. Ask the supplier how each statistic is defined before you report it.
6. **Video can also develop the coach.** A small study found that filming training helped youth coaches review their own coaching behaviour (Partington et al., 2015).

5.4 Using video in training and player feedback

GA ▸ RECOMMENDATIONS FOR INTEGRATING TOOLS INTO TRAINING ROUTINES

- **Record every match, tag the ones you will use.** Tagging takes far more time than recording, so decide each week which footage gets tagged and by whom.
- **One individual review per player per month** is a realistic target for a small academy; this means a few players each week. Keep each review short and positive, with one learning point.

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- **Link clips to the next session.** "Here is the moment; here is the drill on Thursday" turns video into practice.
- **Psychological safety first.** Players dislike critiquing teammates in front of the group (Middlemas & Harwood, 2018). Keep group sessions about the team shape, and individual points for individual meetings.
- **Adapt the format.** For players with visual or hearing impairments, add spoken or written description to clips, and check with the player what works.

5.5 Troubleshooting

GA ▸ TROUBLESHOOTING TIPS

Table 5.1 Common video problems and what to do

Problem	Likely cause	What to do
Match video will not upload	Missing title, slow or unstable connection, or a firewall	Check the recording has a title, test upload speed, switch to stable Wi-Fi or a cable, and ask whoever manages the network about the firewall (Veo, n.d.-b).
Players at the far side are too small to see	Camera too low or too close	Raise the camera and move back (step 1). Use position B only for drills near one goal.
Two coaches tag the same match differently	Definitions missing or unclear	Rewrite the definition, re-run the agreement test (steps 2–3).
Recording stops mid-match	Storage full or battery low	Clear storage and charge the day before (step 6). Keep a spare battery or power bank.
Player disengages in review	Session too long, too critical, or in front of peers	Shorten to 2–3 clips, mostly positive, one to one (section 5.4).
A parent objects to a clip online	No legal basis or information for publication	Take the clip down, then fix the consent routine (section 2.5, Annex C).

5.6 Quick-start checklist by role

COACH

- ☐ Agree the tag list and definitions with the analyst.
- ☐ Pick 2–3 clips per player; mostly positive.
- ☐ Link each clip to a drill in the next session.

SCOUT

- ☐ Use tagged clips to check a live observation.
- ☐ Compare a player with their own earlier footage.
- ☐ Do not rank players on automated counts alone.

ANALYST / PERFORMANCE STAFF

- ☐ Keep the camera position, file naming and tag list fixed.
- ☐ Run the two-coder agreement test each season.
- ☐ Upload and name every file the same day.

ACADEMY MANAGER

- ☐ Separate consent for analysis from consent for publication.
- ☐ Budget for storage, a tall tripod and a spare battery.
- ☐ Name who may see footage, and where it lives.

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WORKING WITH THE DATA

6 Bringing the data together: dashboards and the player profile

Chapters 3 to 5 each produce numbers. This chapter is about putting them next to each other without being misled. It applies the rule from section 2.5, principle 6, to all three sources: numbers describe the player; a person decides.

6.1 Combining AI, wearable and video data

Figure 6.1 shows the flow. Each source passes through a quality check by its data owner before it enters the player profile. From the profile come two things: a short report to the coach, and a decision taken by a person.

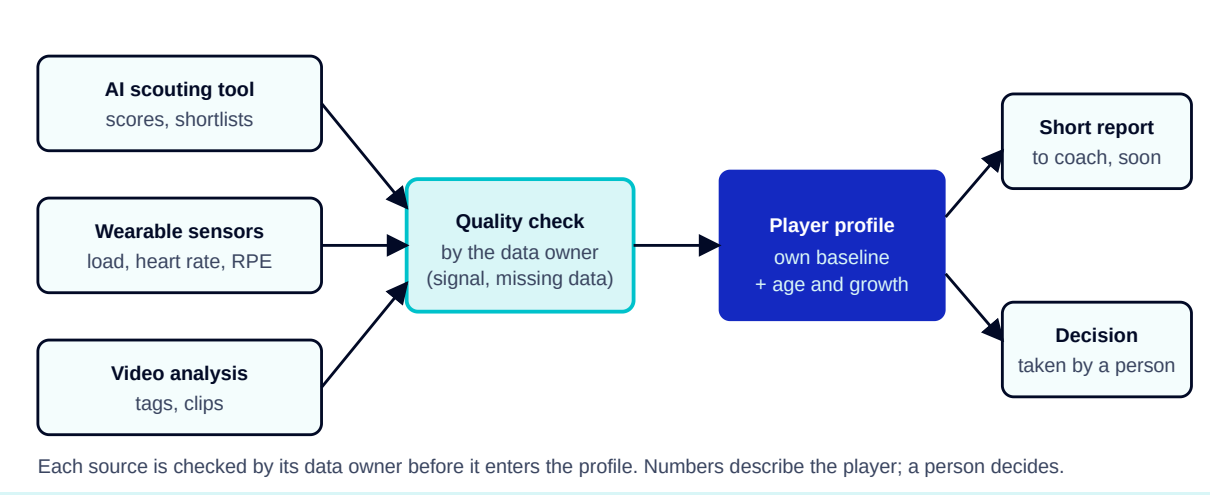


Figure 6.1 How the three sources come together. Each source is checked before it enters the profile.

Three rules for combining:

- **Keep the sources separate in the profile.** A GPS distance, an AI score and a tag count are different kinds of evidence. Show them side by side; do not add them into one "overall score".
- **Check each source on its own terms.** Signal quality for wearables (section 4.2), data completeness for AI (section 3.2), tag agreement for video (section 5.2).
- **Do not mix systems.** Numbers from different brands or systems are not comparable (section 4.3). The same applies to AI scores from different model versions and to tags from different definitions.

D2.3's Lithuanian cases (Cases 10–12) describe profiles that combine video, monitoring and emerging AI tools. They also note that some of this integration was still in development at the time of writing. Distinguish what you use now from what you plan to use.

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6.2 Reading a performance dashboard

Most systems offer a dashboard. Use it in this order:

1. **Read the data quality indicators first.** Missing sessions, poor signal, low completeness. If quality is poor, stop here for that player.
2. **Look at the trend.** One high number after one session means little; four weeks in the same direction is worth acting on.
3. **Find out how each "score" is built.** Suppliers' composite scores (load scores, readiness scores, talent scores) are formulas you did not write. Ask for the formula before you report the number (Torres-Ronda et al., 2022).
4. **Turn it into one message.** A few key numbers per player and one clear sentence, soon after the session (Torres-Ronda et al., 2022). The dashboard serves the staff; the sentence serves the coach and the player.
5. **Treat every number as an estimate with error** (Torres-Ronda et al., 2022).

6.3 Individual baselines and appropriate reference groups

The most useful comparison for a developing player is with their own earlier data. Build a baseline for each player over the first weeks of a season, and read later values against it. D2.3 (Cases 6 and 7) found that tracking change per player, rather than team averages, served development decisions better.

Group comparisons still have a place, but choose the group with care:

- **Same age group, same system, same season.** A group that differs in any of these is not a fair reference.
- **Account for age and maturity.** In youth players, read physical data in relation to age, growth stage and fitness (Torres-Ronda et al., 2022). For AI outputs, check by birth quarter and maturity status (Hill et al., 2020).
- **Use position groups for tactical video**, not the whole squad.

A baseline cannot tell you who will be injured (Bahr, 2016) or who will be selected (Altmann et al., 2024). It shows whether this player is changing, and in which direction.

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7 Integrating the tools into training routines

WORKING WITH THE DATA

GA ▸ RECOMMENDATIONS FOR INTEGRATING TOOLS INTO TRAINING ROUTINES

Chapters 3 to 5 give technology-specific routines. This chapter puts them into one week.

7.1 A sample weekly cycle

Figure 7.1 and Table 7.1 use match-day notation: MD-4 means four days before the match, MD+1 the day after.

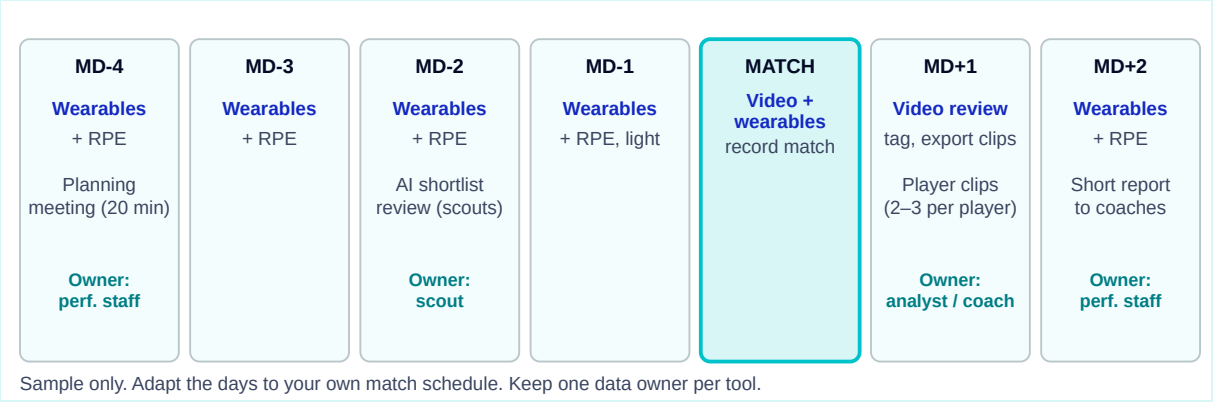


Figure 7.1 A sample week. Adapt the days to your match schedule. The constants are: wearables every training day, one AI shortlist review, one match review with a few individual player reviews, one short report, one data owner per tool.

Table 7.1 The sample week in detail

Day	Wearables	Video	AI scouting	Meeting
MD-4	Record + RPE	—	—	Planning (20 min): last week's report, this week's plan
MD-3	Record + RPE	—	—	—
MD-2	Record + RPE	—	Shortlist review, about 20 min (scout records decisions)	—
MD-1	Record + RPE (light session)	—	—	—
Match	Record (if used in matches)	Record whole match	Live observation of flagged players	—
MD+1	—	Tag; export 2–3 clips per player	—	—
MD+2	Record + RPE	Individual reviews (a few players per week)	—	Short report to coaches

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7.2 Match-day and post-match review workflow

1. **Before:** camera at the marked position; units fitted and locked (if used); scouts know which flagged players to watch.
2. **During:** record without stopping. Do not use live numbers to decide substitutions; the match is for coaching.
3. **Same day:** upload and name the video; download and check wearable data.
4. **Next day:** tag the match; export player clips; the data owner flags any quality problem.
5. **Within two days:** one short report to the coaching team, and individual clips to a few players.

7.3 Feedback to players and parents

- **Players** get short, individual and mostly positive feedback with one learning point, linked to the next session (Middlemas & Harwood, 2018). Give them numbers in context ("more than your October baseline"), not raw dashboards.
- **Parents** are told what is collected, why, who sees it and how long it is kept (section 2.5). Give them a plain summary once or twice a season, without rankings.
- **Session-RPE** lets you compare what the coach planned with what players report; treat a large gap as a reason to talk (section 4.3).
- **Never use data to punish.** Players who experience video or numbers as punishment switch off (Middlemas & Harwood, 2018).

7.4 Staged roll-out: pilot, review, scale

Stage	What	How long	Decide at the end
1 Pilot	One technology, one age group, one data owner	One season (or half)	Did the routine run every week? Did coaches use the report?
2 Review	Look at the practical indicators (section 9.2) with staff and a few players	Two weeks	Continue, fix, or stop
3 Scale	Add an age group or a second technology; combine data (chapter 6)	Next season	Repeat the review

D2.3 (section 14.3) advises tracking practical indicators, for example feedback turnaround, review consistency, staff time and alert follow-up, before claiming performance improvements. Section 9.2 lists them.

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QUICK REFERENCE

8 Troubleshooting quick reference (all tools)

GA ▸ TROUBLESHOOTING TIPS

One page to print and keep at the ground. Each row points to the fuller entry in chapters 3 to 5.

Symptom	First check	See
Wearable: no distance or speed	Satellite lock; indoor profile	Table 4.1
Wearable: odd numbers for one session	Signal-quality indicators (satellites, HDOP)	Table 4.1
Wearable: heart-rate strap no signal	Wet electrodes, tighten, orientation, Bluetooth, re-pair	Table 4.1
Wearable: everyone's numbers jumped	Firmware update or changed zones in the log	Table 4.1
Wearable: one player does not match effort	Unit number vs player list; vest fit	Table 4.1
Video: upload stuck	Title set; connection; firewall	Table 5.1
Video: far side too small	Camera height and distance	Table 5.1
Video: coders disagree	Tag definitions; agreement test	Table 5.1
Video: recording stopped	Storage; battery	Table 5.1
AI: scouts disagree with tool	What the model was trained on	Table 3.1
AI: shortlist mostly early-born	Birth-quarter check	Table 3.1
AI: scores changed overnight	Version log	Table 3.1
AI: high score, little data	Completeness column	Table 3.1
Any: staff stopped using the report	Length and timing of the report	6.2, 7.3
Any: parent or player objects	Legal basis, information given, withdrawal route	2.5, Annex C
Any: nobody did the weekly step	Data owner and backup	2.4, 9.1

If a problem is not here, write it down with the date and what fixed it. Add it to this page; within a season your own list will fit your academy better than this one.

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PLANNING

9 Building your academy technology-integration plan

The TalentTECH curriculum (D2.1, section 4.2) asks participants to prepare a short academy technology-integration plan drawing on at least two core modules. This chapter is the template. Fill it in with the people named in section 2.4, and review it at the end of each stage (section 7.4).

9.1 Plan template

Academy technology-integration plan — one page

Academy and age group(s)	
The problem we are solving (section 2.1)	
How we will know it is solved	
Readiness band (Annex B)	Starting ☐ Developing ☐ Established ☐
Technology for this season (one)	AI tool ☐ Wearables ☐ Video ☐ Small-academy option ☐
Data owner / backup	
Interpreter / feedback lead / decision maker	
Data protection contact; DPIA needed? (Annex C)	Yes ☐ No ☐ Asked DPO ☐
Legal basis and consent routine in place	Yes ☐ Date:
Weekly routine (chapter 7): who does what, which day	
Budget: licences / equipment / staff hours per week	
Pilot period and review date	
Indicators we will track (section 9.2)	
Decision at review: continue / fix / stop	

9.2 Simple indicators to track

These indicators track implementation. They tell you whether the routine is running. They do not prove that players developed or that injuries fell; those claims need a study design this guide does not cover.

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Indicator	How to count it	Target to start with
Routine completed	Sessions with full data ÷ sessions held	9 in 10
Missing data	Players with no record for a session	Known and explained each week
Feedback turnaround	Days from session or match to short report	Within 2 days
Review consistency	Two-coder agreement (video); scout decisions recorded (AI)	Test run once a season; every flagged player has a decision
Staff time	Hours per week per tool, by the owner	Within the budgeted hours
Alert follow-up	Flags from any tool that a person reviewed	All of them
Staff and player feedback	Three questions at the review: useful? clear? too long?	Discussed at the review

Feedback turnaround, review consistency, staff time and alert follow-up are the examples of "practical indicators" that D2.3 gives; the other rows are added by the authors (D2.3, section 14.3).

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Annex A Printable step-by-step setup checklists

One checklist per technology. Tick each step. The numbers match the steps in chapters 3 to 5.

A.1 AI scouting tool

#	Once, before the first season	Done
1	Supplier's validation answers on file (how, how many players, which data)	☐
2	Checked for biometric or emotion-recognition functions; DPO consulted	☐
3	30-minute AI-literacy briefing held for users	☐
4	Player records: code, date of birth, maturity estimate where possible	☐
5	One-line definition written for every data field	☐
6	Tool version and date recorded in the log	☐
#	**Every scouting cycle**	**Done**
7	New assessments entered the same way, soon after observation	☐
8	Data completeness checked before reading scores	☐
9	Shortlist sent to the named scout; a decision recorded for every flagged player	☐
10	Once a season: shortlist compared by birth quarter and maturity status	☐

A.2 Wearable sensors

#	Once, before the first session	Done
1	System chosen; FIFA EPTS test report read if listed	☐
2	One numbered unit per player, recorded in the player list	☐
3	Each player's measured maximum heart rate entered	☐
4	Speed zones written down for the season	☐
5	Unit model and firmware version in the log	☐
#	**Before every session**	**Done**
6	Units and straps charged the day before	☐
7	Session created and split into drills, standard name	☐
8	Vests fitted tightly; unit on the upper back	☐
9	Units switched on outdoors; satellite lock before start	☐
#	**After every session**	**Done**
10	Data downloaded; signal quality checked; poor sessions marked	☐
11	Indoor sessions labelled "indoor"	☐
12	Session-RPE collected from every player	☐
13	Units on charge; data stored under access rules	☐

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A.3 Video analysis

#	Once, before the first recording	Done
1	Camera position chosen, high and wide at the halfway line, and marked	☐
2	One-line definition written for every tag	☐
3	Two-coder agreement test done; definitions fixed	☐
4	File naming pattern set	☐
5	Who may see footage, and where it is stored, decided	☐
#	**Every recording**	**Done**
6	Camera charged; storage cleared	☐
7	Set up at the marked position; four corners in frame	☐
8	Whole session or match recorded without stopping	☐
9	File uploaded or copied and named the same day	☐
#	**After every recording**	**Done**
10	Footage tagged with the defined tag list only	☐
11	2–3 short, mostly positive clips exported per player	☐
12	Clips reviewed with the player within a few days	☐

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Annex B Academy readiness self-assessment form

Answer honestly. Mostly "A" = Starting; mostly "B" = Developing; mostly "C" = Established (section 2.2). The bands are a planning aid, as section 2.2 explains.

Question	A	B	C
1 People. Who will own the data?	☐ Nobody named	☐ One person, no backup	☐ Data owner and backup named
2 Time. Hours per week available for setup, checking and reporting	☐ None planned	☐ 1–2 hours	☐ 3+ hours, in the job description
3 Equipment. Laptop or tablet available at the ground	☐ No	☐ Shared, sometimes	☐ Dedicated
4 Internet. Connection at the ground	☐ None or mobile only	☐ Wi-Fi, unstable	☐ Stable Wi-Fi or cable
5 Data handling. Written rules on who sees player data and for how long	☐ None	☐ Informal	☐ Written and followed
6 Budget. Money for licences, equipment and replacements for three seasons	☐ Not known	☐ One season	☐ Three seasons
7 Trust. Players and parents informed; consent routine	☐ Not yet	☐ Forms exist, not explained	☐ Explained, documented, withdrawal possible
Result	Starting: ___ A	Developing: ___ B	Established: ___ C

Date: _____ Completed by: _____ Review date: _____

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Annex C Data protection and safeguarding checklist

A checklist, not a form and not legal advice. Each item names the rule in section 2.5. Work through it with your DPO or legal adviser before the first session. Keep the completed list on file.

#	Item	Rule	Done
1	Purpose written down for each tool: what data, why, for how long	2.5 (1)	☐
2	Legal basis decided and documented for each use (not assumed to be consent)	2.5 (2)	☐
3	If consent: freely given, specific, informed; refusing has no effect on selection; withdrawal as easy as giving	2.5 (2)	☐
4	Parents involved for minors; national age of digital consent checked with the data protection authority (DPA); proportionate check of parental consent	2.5 (3)	☐
5	Players told, on reaching the national age, that they can confirm or withdraw consent	2.5 (3)	☐
6	Wearable and heart-rate data treated as health data; Article 9 exception identified with the DPO	2.5 (4)	☐
7	DPIA question answered: national DPA list checked; DPIA done if required or in doubt	2.5 (5)	☐
8	Rule written and known: no selection or release decision is taken by a tool alone; a named person decides and records it	2.5 (6)	☐
9	Plain-language information given to players: what, why, who sees it, how long	2.5 (7)	☐
10	Video: internal analysis and publication separated; separate legal basis and information for any clip posted online; withdrawal route	2.5 (8)	☐
11	Tool checked for face recognition, emotion recognition or other biometric functions; DPO consulted if present	2.5 (8), AI Act box	☐
12	Security: player codes where possible; strong passwords; encrypted laptops and phones; backups; access limited to named staff	2.5 (9)	☐
13	Retention period set for each data type; deletion routine exists	2.5 (1)	☐
14	Supplier contract covers data processing (who is controller, who is processor, where data is stored)	2.5 (1), (9); Glossary	☐
15	Applicable law confirmed: GDPR and national law in EU partners; KVKK in Türkiye	2.5 (10)	☐
16	AI tool: staff briefed on what it does and its limits (AI literacy)	AI Act box	☐

Date: _____ Completed by: _____ Reviewed with DPO / adviser: _____

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Annex D Glossary

Accelerometer	A motion sensor in a wearable unit that measures accelerations. It works indoors and outdoors.
ACWR (acute:chronic workload ratio)	A ratio of recent to longer-term load shown in some software. Researchers have recommended that it be dropped as an injury flag (section 4.3).
AI literacy	Knowing enough to use an AI tool in an informed way and to understand its risks (AI Act, Art. 4).
AUC (area under the curve)	A measure of how well a model separates two groups. 0.5 is chance; 1.0 is perfect.
Baseline	A player's own typical values, built over the first weeks of a season, used to read later values.
Bio-banding	Grouping players by biological maturity rather than chronological age. Evidence on its effects is still developing.
Biometric data	Data from specific technical processing that uniquely identifies a person, for example face recognition. Ordinary video is not automatically biometric data.
Calibration	Whether a model's probabilities match reality: a score of 0.8 should mean about 8 in 10 such cases were positive.
Controller / processor	Under the GDPR, the controller decides why and how data is processed (usually the academy); a processor handles data on its behalf (often the supplier).
Deployer	Under the AI Act, an organisation that uses an AI system, for example an academy using a scouting tool.
DPA (data protection authority)	The national supervisory authority for data protection.
DPIA (data protection impact assessment)	A written assessment of risks to people before high-risk processing (GDPR, Art. 35).
DPO (data protection officer)	The person responsible for data protection in an organisation. Not every academy must appoint one; every academy needs a named contact.
EPTS	Electronic Performance and Tracking Systems: FIFA's term for wearable and optical tracking systems, with a quality programme and public test reports.
External load	What the player did: distance, speed, accelerations.
Firmware	The software inside a device. Updates can change the numbers slightly.
GDPR (General Data Protection Regulation)	Regulation (EU) 2016/679, the EU law on personal data. Partners in Türkiye follow KVKK instead.
GPS	Satellite positioning. Gives distance and speed outdoors only.
HDOP	A satellite-geometry quality value shown in some software. Lower is better.
Health data	Personal data about physical or mental health. A special category under the GDPR (Art. 9). Sensor data collected over time is likely to count.
IMU (inertial measurement unit)	The group of motion sensors in a wearable unit.
Internal load	How the body responded: heart rate, session-RPE.
KVKK	Law No. 6698 on the Protection of Personal Data (Türkiye). The authority that enforces it carries the same abbreviation.

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Legal basis	One of six grounds in the GDPR (Art. 6) on which personal data may be processed. Consent is one of them.
Maturation bias	Selection advantage for early-maturing players. Separate from the relative age effect.
MD-n / MD+n	Match day minus or plus n days, for example MD-3 is three days before the match.
Profiling	Automated processing of personal data to evaluate aspects of a person, such as performance or potential.
Recital	An introductory paragraph of an EU regulation that explains the intent of its articles.
Relative age effect	Selection advantage for players born early in the selection year. Strongest in adolescence.
Satellite lock	When a GPS unit has found enough satellites to record position. Needs time outdoors before the session.
Session-RPE (rating of perceived exertion)	A player's 0–10 rating of how hard the whole session was, multiplied by its length in minutes. A validated, no-cost measure of internal load.
Tag	A label placed on a moment in video, for example "shot". Every tag needs a written definition.
Two-coder agreement	Having two people tag the same footage and comparing the results to check that definitions are clear.

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Annex E Requirements traceability (GA → section)

For reviewers. Each requirement from the Grant Agreement's definition of D2.4 (Annex 1, deliverable table) and Task T2.3, and where this guide meets it.

Grant Agreement requirement	Where in this guide
Step-by-step manual	Numbered procedures in 3.2, 4.2, 5.2; Annex A
For football academies, coaches and scouts	1.2; role checklists 3.6, 4.6, 5.6
How to implement and use AI tools	Chapter 3
How to implement and use wearable sensors	Chapter 4
How to implement and use video analysis systems	Chapter 5
For player evaluation and performance enhancement	1.1; chapter 6
Technical setup instructions	3.2, 4.2, 5.2; Annex A
Best practices for data interpretation	3.3, 4.3, 5.3; chapter 6
Recommendations for integrating tools into training routines	3.4, 4.4, 5.4; chapter 7
Troubleshooting tips	3.5, 4.5, 5.5; chapter 8
T2.3: configuring and using AI tools; setting up and interpreting wearable data; using video analysis to assess performance	3.2–3.4; 4.2–4.3; 5.2–5.3
T2.3: diagrams, screenshots and troubleshooting tips	Figures 3.1, 4.1, 5.1, 5.2, 6.1, 7.1 (schematic, labelled illustrative); Tables 3.1, 4.1, 5.1; chapter 8
Language: English	Whole document
Format: PDF (printable)	This document
Format: HTML web page	https://talenttech-project.github.io/d2-4/ (same content as this document, with the videos embedded)
Format: video walkthrough (MP4)	Four videos for chapters 2–5, https://doi.org/10.5281/zenodo.24012674; links and QR codes at the start of each chapter
Art. 17.2–17.3: EU emblem, funding statement, disclaimer; factually accurate information	Cover, every page footer, back cover; every number and rule cited to a checked source (References)
Annex 1: open licence for training materials	CC BY-SA 4.0 (document information; back cover)
Art. 14–15, Annex 5: ethics, data protection, third-party rights	2.5; Annex C; no real screenshots or photos of people used

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vidisport

COMPASS Academy

Web version with videos

talenttech-project.github.io/d2-4

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