



**Gruppo Giudici Gare**  
**FEDERAZIONE ITALIANA DI ATLETICA LEGGERA**

**Self Crono - Stage d'aggiornamento 2019**

**Il cronometraggio con PhotoFinish**

**nelle Manifestazioni Top e nelle Realtà Regionali**

**Bolzano - 12-13 ottobre 2019**



# The Microgate Approach

Federico Gori

# Programma della sessione

- **Case study: Falcon Races**
  - Strumenti
  - Integrazione tecnologica
- **ReiPro:** un nuovo strumento di cronometraggio
- **Le nuove camere Vision Pro**
- **MispeakerGT:** la grafica televisiva alla portata di tutti

# Falcon Races Management

## The story

In the last few years, Microgate has been actively involved in the management of Falcon races held in the United Arab Emirates (UAE) and, specifically, in the major championships of Dubai and Abu Dhabi.



# Falcon Races Management

## What we provide

In the early stages the target was to sell timing equipment.

Today we provide:

- Timing equipment
  - Chronometers
  - Lynx cameras
  - Lidars
  - Displayboards
- Body rental with a team of 15 skilled timekeepers
- Race management software
  - Falcon Manager (registration and race calendar manager)
  - Falcon Race (check in, shuffle, start list, results)
  - TV Graphic (Mispeaker GT)
- MG Rings (RFID rings)
- Cloud services
- Website
- App (IOS and Android)

# Falcon Races Management

## The falcon races

### Telwah

It is the queen of races and the one that involves the largest number of competitors.

It is a classic in line speed race in which the falcon has to cover a distance of 400 metres by flying very close to the ground while staying within the boundary layer as much as possible

# Falcon Races Management

The falcon races

## Telwah



# Falcon Races Management

The falcon races

## Telwah : the start area



# Falcon Races Management

The falcon races

## Telwah : the start area



# Falcon Races Management

The falcon races

## Telwah : the start area



# Falcon Races Management

The falcon races

## Telwah : the race



# Falcon Races Management

The falcon races

Telwah : the finish



# Falcon Races Management

The falcon races

Telwah : the finish



# Falcon Races Management

The timing infrastructure

## The material

- Rei2-ReiPro
- Lidar with Wireless Linkgate radio transmission
- Lynx cameras
- Micrograph and Microtab

# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

## The timing infrastructure

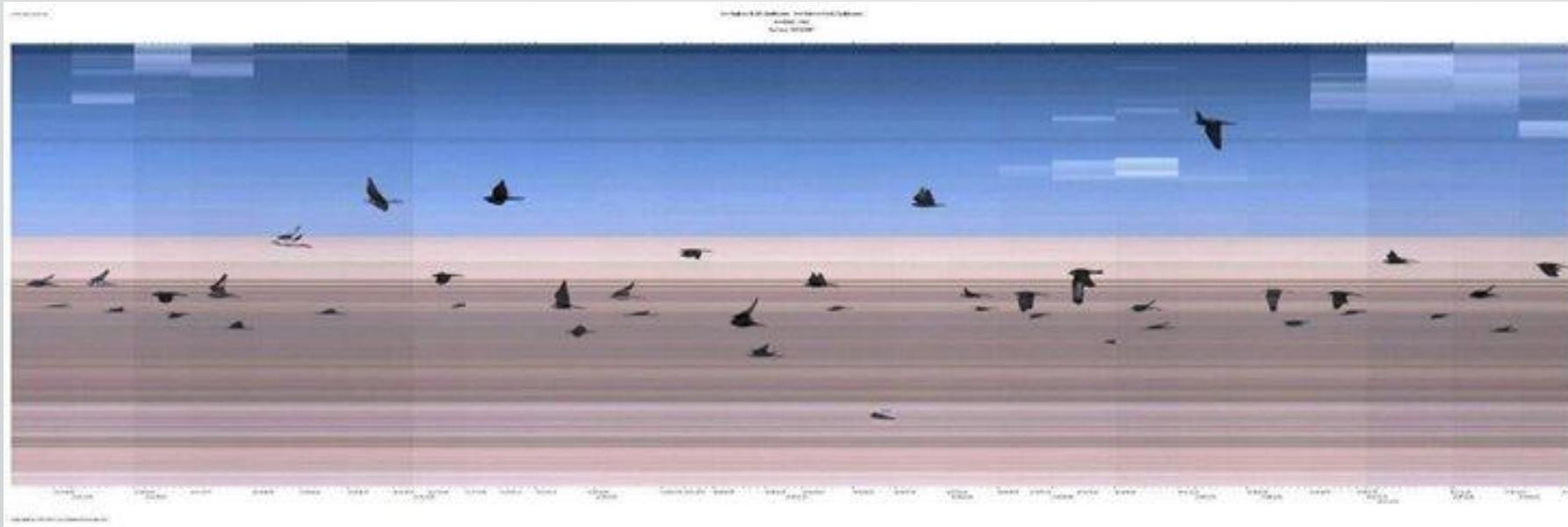
### The material



# Falcon Races Management

## The timing infrastructure

### The material

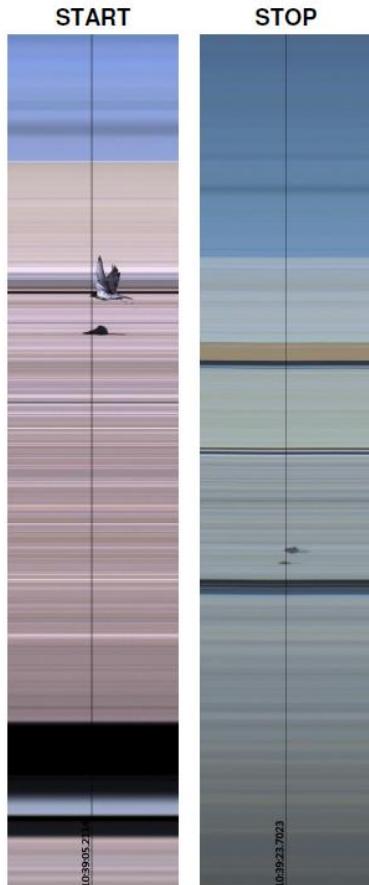


# Falcon Races Management

## The timing infrastructure

### The material

#### Judge Report:



#### Race name:

Quarmoosha Jirnas Sheikh - Trophy

#### Owner:

F3-K

#### Falcon: 3

4.153

#### REI2 Times:

START	STOP	NET
10:39:05.2145	10:39:23.7031	18.488

#### FINISH LYNX Times:

START	STOP	NET
10:39:05.2114	10:39:23.7023	18.490

# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

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# Falcon Races Management

## The timing infrastructure

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# Falcon Races Management

## The timing infrastructure

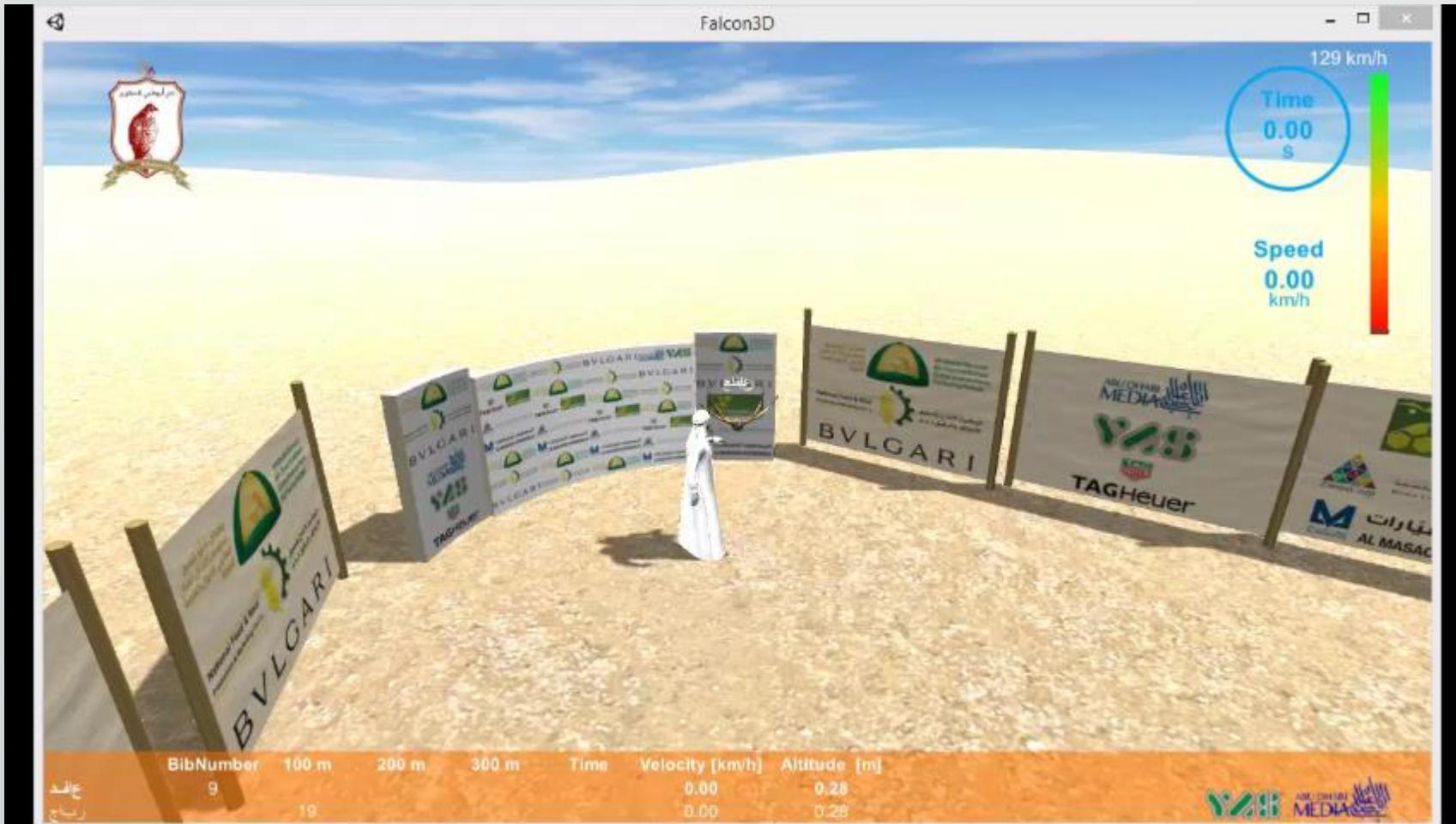
### The material



# Falcon Races Management

## The timing infrastructure

### The material



# Falcon Races Management

## The timing infrastructure

### The Software

All data is stored in a central database on a server in local clusters, with cloud mirroring, so that it can be used by websites, mobile apps and data-sharing services (APIs, web services, etc.)



# Falcon Races Management

## The timing infrastructure

### The Software

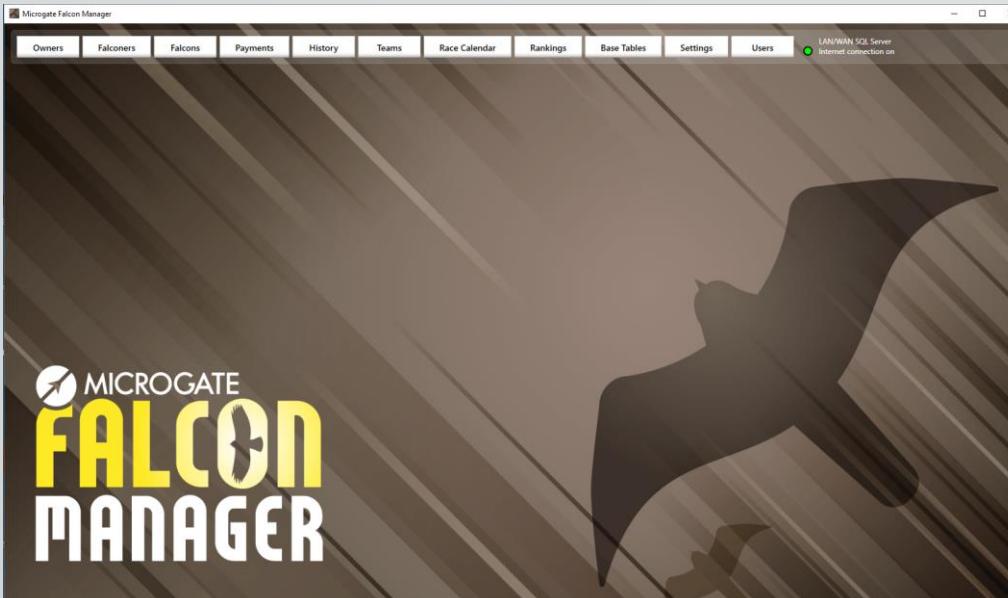


# Falcon Races Management

## The timing infrastructure

### The Software: RaceManager Falcon Edition

- Owners registration
- Falconers registration
- Falcons registration (MG Ring, pictures)
- Race calendars
- Multiseason Statistics



# Falcon Races Management

## The timing infrastructure

### The Software: RaceManager Falcon Edition



# Falcon Races Management

## The timing infrastructure

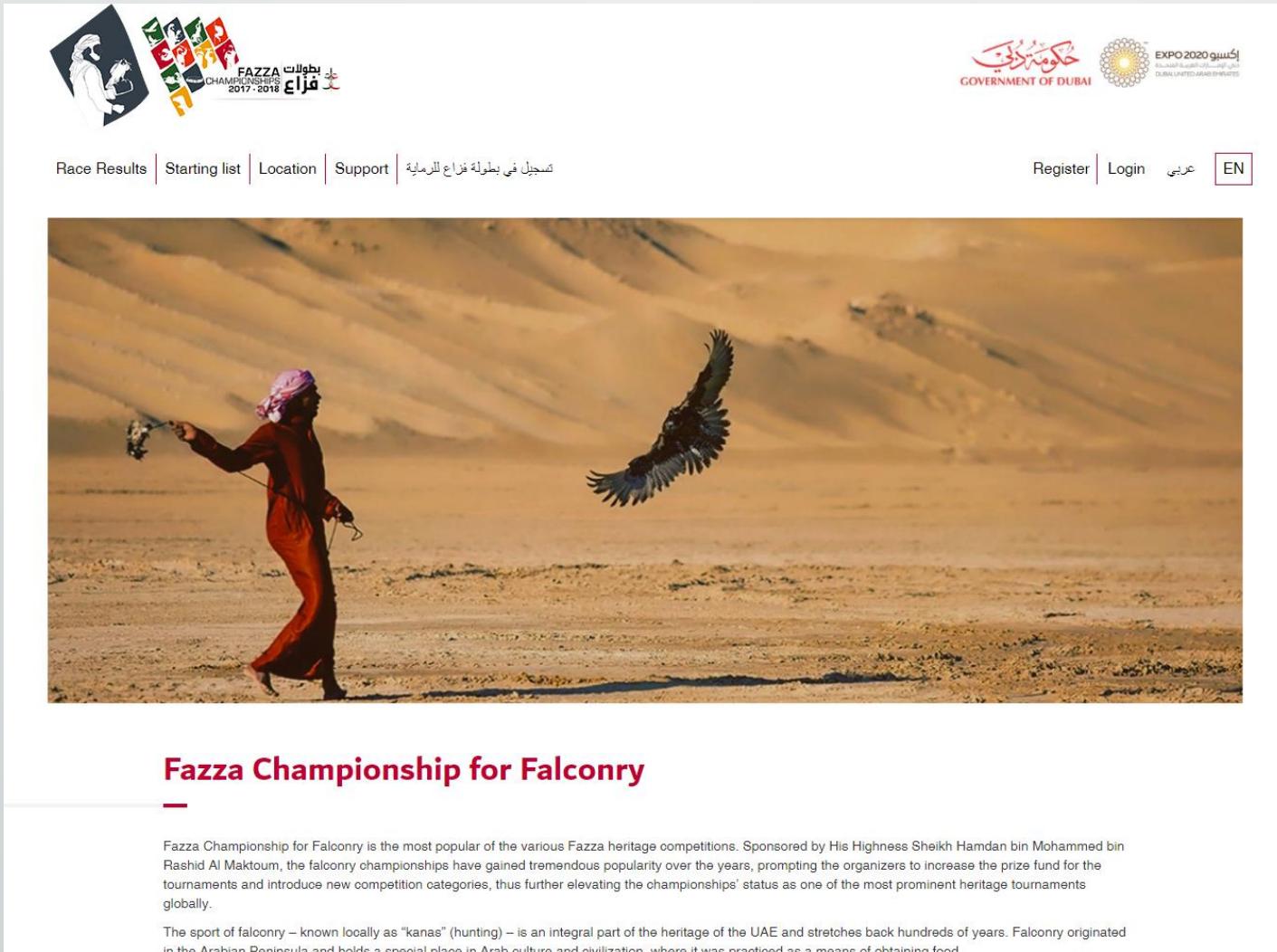
### The Software: Falcon Race

- The highlight of race management is entrusted to a custom version of [MiSpeaker](#), a well-known race timing software.
- All the various additional stages are managed by specific modules (Miln, MiOut, MiStart, etc.).



# Falcon Races Management

## The websites and Apps



The screenshot shows the Fazza Championship for Falconry website. At the top left is the logo for the "FAZZA CHAMPIONSHIP FOR FALCONRY 2017 - 2018". At the top right are logos for "GOVERNMENT OF DUBAI" and "EXPO 2020 DUBAI UNITED ARAB EMIRATES". Below the logos are navigation links: "Race Results", "Starting list", "Location", "Support", "تسجيل في بطولة فناء للرماية" (Arabic), "Register", "Login", "Arabic", and "EN". The main image is a photograph of a falconer in traditional red robes and a pink turban standing in a desert, holding a lure, with a falcon flying towards him. Below the image is the title "Fazza Championship for Falconry". A descriptive paragraph follows, mentioning the tournament's popularity and heritage. At the bottom, a smaller paragraph discusses the history and integral part of falconry in UAE culture.

FAZZA CHAMPIONSHIP FOR FALCONRY  
2017 - 2018

GOVERNMENT OF DUBAI EXPO 2020 DUBAI UNITED ARAB EMIRATES

Race Results | Starting list | Location | Support | تسجيل في بطولة فناء للرماية | Register | Login | عربي | EN



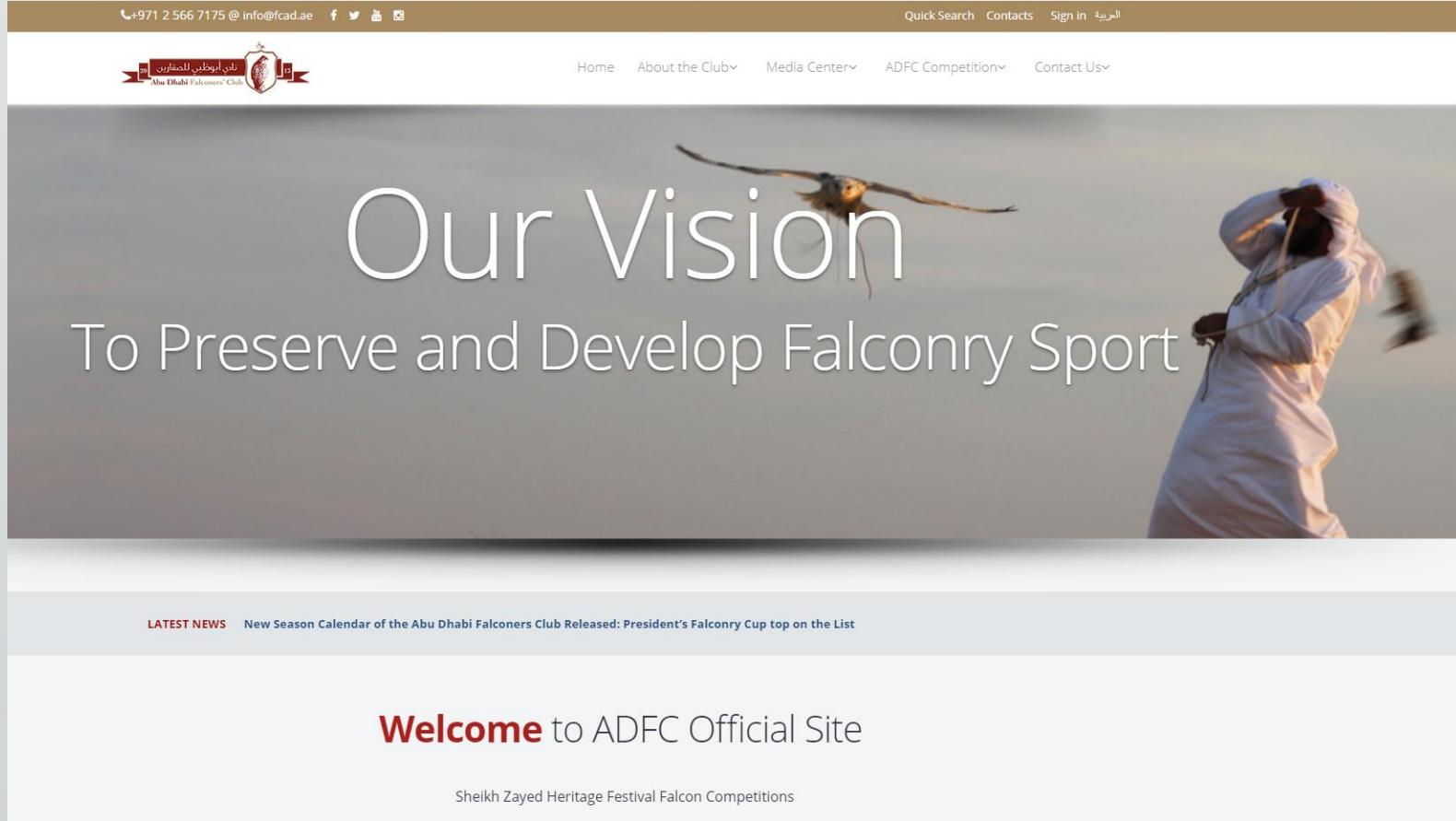
## Fazza Championship for Falconry

Fazza Championship for Falconry is the most popular of the various Fazza heritage competitions. Sponsored by His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, the falconry championships have gained tremendous popularity over the years, prompting the organizers to increase the prize fund for the tournaments and introduce new competition categories, thus further elevating the championships' status as one of the most prominent heritage tournaments globally.

The sport of falconry – known locally as “kanas” (hunting) – is an integral part of the heritage of the UAE and stretches back hundreds of years. Falconry originated in the Arabian Peninsula and holds a special place in Arab culture and civilization, where it was practiced as a means of obtaining food.

# Falcon Races Management

## The websites and Apps



The screenshot shows the homepage of the Abu Dhabi Falconers Club (ADFC) website. At the top, there is a navigation bar with links for Quick Search, Contacts, Sign in, and Arabic language selection. Below the navigation is a banner featuring a falcon in flight and a falconer in traditional dress. The banner contains the text "Our Vision" and "To Preserve and Develop Falconry Sport". At the bottom of the banner, there is a news snippet about the new season calendar. The main content area below the banner includes a "Welcome" message and a link to the Sheikh Zayed Heritage Festival Falcon Competitions.

+971 2 566 7175 @ info@fcad.ae    [f](#) [t](#) [g](#) [o](#)

Quick Search   Contacts   Sign in   العربية

لدنی ادھبیل المغافرین | Abu Dhabi Falconers Club

Home   About the Club ▾   Media Center ▾   ADFC Competition ▾   Contact Us ▾

# Our Vision

## To Preserve and Develop Falconry Sport

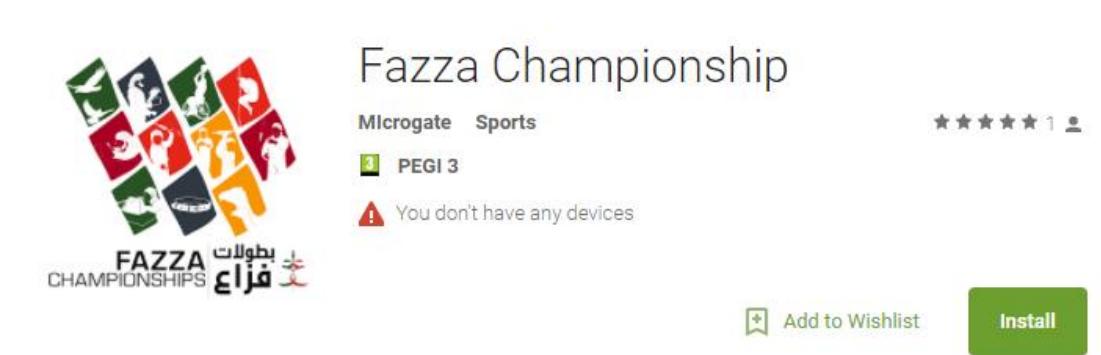
LATEST NEWS   New Season Calendar of the Abu Dhabi Falconers Club Released: President's Falconry Cup top on the List

### Welcome to ADFC Official Site

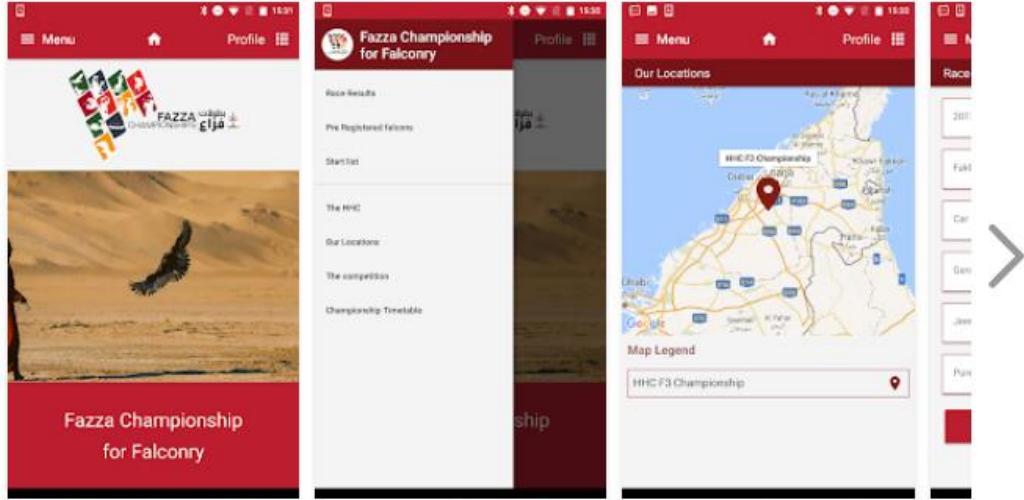
Sheikh Zayed Heritage Festival Falcon Competitions

# Falcon Races Management

## The websites and Apps



The Google Play Store listing for the "Fazza Championship" app. The app icon features a stylized falcon silhouette composed of various colors. The title "Fazza Championship" is displayed prominently. Below it, the developer is listed as "Microgate Sports". The rating is 1 star from 1 review. The age rating is PEGI 3. A warning message states "You don't have any devices". There are "Add to Wishlist" and "Install" buttons.

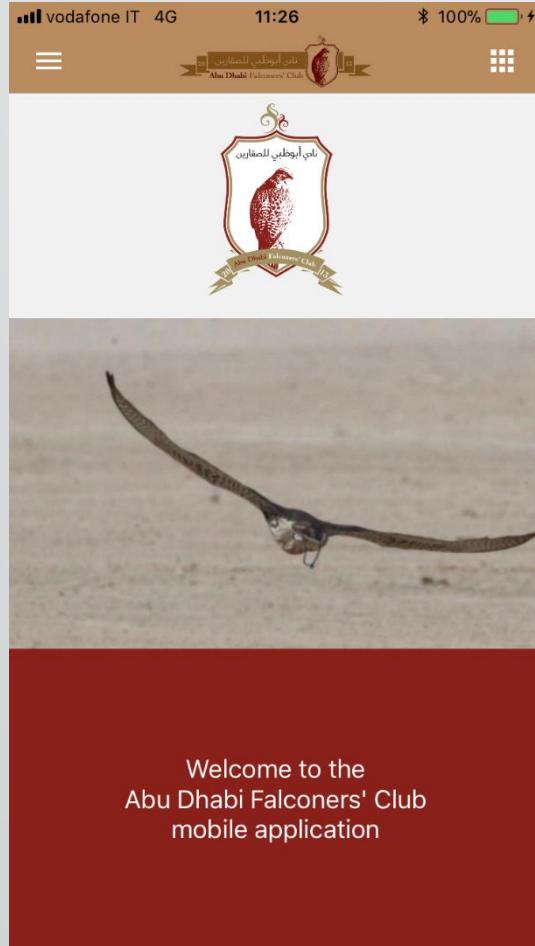


Three screenshots of the app's user interface are shown. The first screenshot shows a desert landscape with a falcon in flight. The second screenshot shows a menu with options like "Race Results", "Pre Registered Falconers", "Start List", "The HHC", "Our Locations", "The competition", and "Championship Timetable". The third screenshot shows a map of the UAE with several locations marked, including "HHC3 Championship" and "HHC F3 Championship". A large right-pointing arrow indicates more screens are available.

The official and free application for Hamdan Bin Mohammed Heritage Center for Falcon Championship

# Falcon Races Management

## The websites and Apps



**Federico Gori**

Participants

Pre Registered

Results

Top Falconers

The club

About

Our locations

Competition

About

Guide

2017-2018 - Al Dhafra Heritahe Festival CUP 2017 - Telwah - Public Professional - Jeer/Farkh - Pure Jeer Farkh - Public		
عنتر		
خالد بن ناصر بن مذكر ال شافي الهاجري	Rank	Speed
	1	78.68
لطاں		
حمد محمد كلیب الهمایی	Rank	Speed
	2	77.71
الوهبی		
خلفان بطی سالم القبیسی	Rank	Speed
	3	77.39
براق		

# Falcon Races and more Camel Races



# Falcon Races and more Camel Races

**FinishLynx - [003-1-01]**

**File Edit Event Image Results Scoreboard LapTime Window Help**

(no starts) (no captureable events)

**Event # Round Heat #**

Event	Event #	Round	Heat #		
الثالث - حول محلبات - حول و زمول	3	1	1		
Start	14:26:37.43				
Wind					
LapTime	0	1			
Finish					
Camera 1	5000	4000	Zoom 300%	109 (30)	Left
Camera 3	10	696	Wide 50%	34 (40)	Left
Results					

0.0

**Affiliation**

Time	User	Affiliation	Last Name	Id	Place
12:47.0211143	الإمارات	سعید محمد دری المنشوری	شنبیة	14	1
12:47.994233	قطر	خالد حمد خلیفة العبدالله العطیة	ثماره	24	2
12:48.752684	الإمارات	محمد راشد بن عبد الله الكتبي	أثیر	22	3
12:51.031000	قطر	منصور محمد منصور السيف الطيارين	مرجوعه	3	4
12:52.253813	الإمارات	حمد محمد سالم العبيض	غیہ	21	5
12:52.301066	الإمارات	عاصم محمد عصمان المنصوري	المسلاك	23	6
12:52.423497	قطر	خالد حمد صالح القرقاوات	سوده	10	7
12:52.763830	الإمارات	مسلم صالح طرفة العمالي	رومة	13	8
12:52.814655	الإمارات	مطر محمد محمد فهد العاجري	الذرنا	1	9
13:02.911555	الإمارات	سعید مطر محمد الرئيسي	حملنة	18	10
13:03.261901	قطر	سعود صالح حمد القرقاوات	طبلواه	8	11
13:06.3310402	الإمارات	سعید عبد العزیز النابدی	الولبة	19	12
13:10.663945	الإمارات	ناصر محمد آل سالم المنصوري	شواهن	2	13
13:12.84220	قطر	محمد طالب عقب البايت	الوجه	16	14
13:16.131125	قطر	حمد محمد طالب عقب	الزباره	15	15
13:18.797029	الإمارات	محمد علي جعفر الرئيسي	قصبة	11	16
15:03.383285	الإمارات	سعید احمد محمد دری الملاخي	ازمهه	17	17
15:13.5112663	الإمارات	راشد سيف محمد المنشوری	احرام	6	18

12:47.03 ||| Camera 1

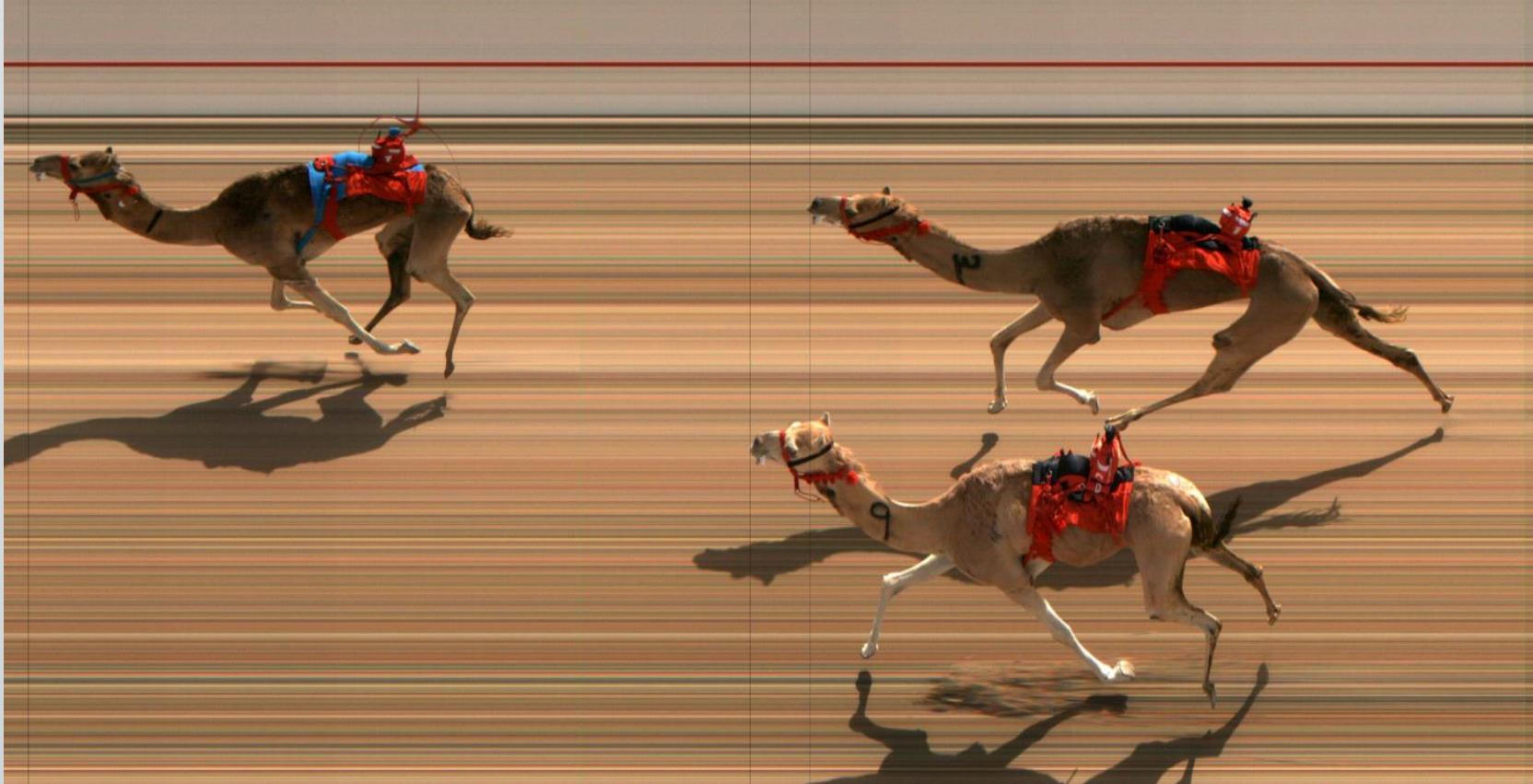
12:47.12 ||| Camera 3



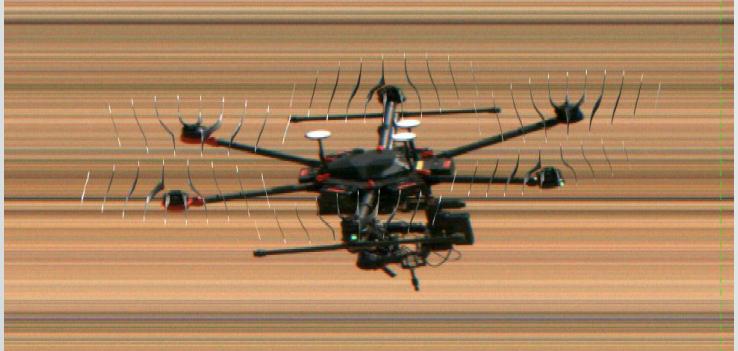


# Falcon Races and more

## Camel Races



# Falcon Races and more Camel Races





# Falcon Races and more



# Panoramica Generale



# Panoramica Generale



# Panoramica Generale



# Panoramica Generale



## Panoramica Generale

### Caratteristiche di base

- Peso: 2,2 Kg
- Dimensioni: 365 x 245 x 78 mm (78mm max, 30mm min)
- Unità misura del tempo: selezionabile fino a 1/10.000 di secondo
- Accuratezza del tempo: 1/50.000 di secondo
- Temperatura d'impiego: -30°C +70°C
- Memoria gare: base 8 GB espandibile fino a 128 GB

## L'infrastruttura Hardware

- Architettura del processing
- Sistema operativo
- Le basi tempi
- Il display
- La stampante
- La batteria e l'alimentazione
- La tastiera
- Le linee di cronometraggio
- Le periferiche
- La connettività

# L'infrastruttura Hardware :

## Architettura del processing

- Architettura basata su due unità di calcolo:

- **Timing Unit**

- FPGA
- Processore NIOS II/e 32bit RISC implementato su FPGA
- Si occupa di gestire tutti i segnali real time compresa la base tempi
- Utilizza un bus dedicato per comunicazione con General CPU



- **General CPU**

- Basata su SOM (System On Module)
  - CPU: Quad Core Arm9 @800MHz
  - RAM: 1 GB
  - Flash NAND: 512 MB
  - eMMC: 8 GB
  - Extended Range: da -40°C a +85°C
  - 10/100/1000 Ethernet
  - Audio Codec
- Memoria MicroSD 8GB



# L'infrastruttura Hardware :

## Il sistema operativo

- Il sistema operativo di Rei Pro si basa su una versione customizzata di Linux che utilizza Yocto Project Framework ottimizzata per sistemi embedded.



# Linux



# L'infrastruttura Hardware :

## Le basi tempi

- Oscillatore termocompensato VCTXO 19,2 MHz collegato direttamente alla FPGA che internamente genera 100MHz
  - Aging (primo anno):  $\pm 1\text{ppm}$
  - Frequency Stability (da -30°C a +85°C):  $\pm 1\text{ppm}$
- GNSS chip antenna module
  - PPS con 30ns accuracy
  - Antenna integrata
  - Switch automatico ad antenna attiva esterna se collegata
  - GPS/QZSS
  - GLONASS
  - BeiDou
  - Predisposto Galileo



# L'infrastruttura Hardware :

## Le basi tempi

Parameter	Specification			
Receiver type	72-channel u-blox M8 engine			
	GPS L1C/A			
	SBAS L1C/A			
	QZSS L1C/A			
	GLONASS L1OF			
	BeiDou B1			
	GNSS	GPS & GLONASS	GPS & BeiDou	GPS
Time-To-First-Fix <sup>1</sup>	Cold start	26 s	27 s	29 s
	Hot start	1 s	1 s	1 s
	Aided starts <sup>2</sup>	2 s	3 s <sup>3</sup>	2 s
Sensitivity <sup>4</sup>	Tracking & Navigation	-167 dBm	-165 dBm	-166 dBm
	Reacquisition	-160 dBm	-160 dBm	-160 dBm
	Cold start	-148 dBm	-148 dBm	-148 dBm
	Hot start	-156 dBm	-156 dBm	-156 dBm
	GNSS	GPS & GLONASS	GPS & BeiDou	GPS
Max navigation update rate		10 Hz	10 Hz	18 Hz
Velocity accuracy <sup>5</sup>		0.05 m/s		
Heading accuracy <sup>5</sup>		0.3 degrees		
Horizontal position accuracy <sup>6</sup>	Autonomous	2.5 m		
	SBAS	2.0 m		
Accuracy of time pulse signal	RMS	30 ns		
	99%	60 ns		



# L'infrastruttura Hardware :

## Il display

- Mitsubishi 7.0 pollici Color TFT-LCD
- Touch di tipo capacitivo 
- Operating temperature : -30°C +70°C
- Con sensore di luminosità per regolazione automatica Brightness

ITEM	SPECIFICATION
Display Area (mm)	152.4 (H) × 91.44 (V) (7.0-inch diagonal)
Number of Dots	800 × 3 (H) × 480 (V)
Pixel Pitch (mm)	0.1905 (H) × 0.1905 (V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	Normally white
Number of Color	262k(6 bit/color), 16.7M(8 bit/color)
Luminance (cd/m <sup>2</sup> )	800
Viewing Angle (CR ≥ 10)	-80~80° (H), -80~60° (V)



# L'infrastruttura Hardware :

## La stampante

- Stampante Seiko
- 384 dots per line e 8 dots/mm
- High speed up to 62,5 mm/s
- Operating temperature : -30°C +70°C
- Nessuna parte in movimento
- Carta
  - Largezza 57mm
  - Diametro max 55mm



# L'infrastruttura Hardware :

## La batteria e l'alimentazione

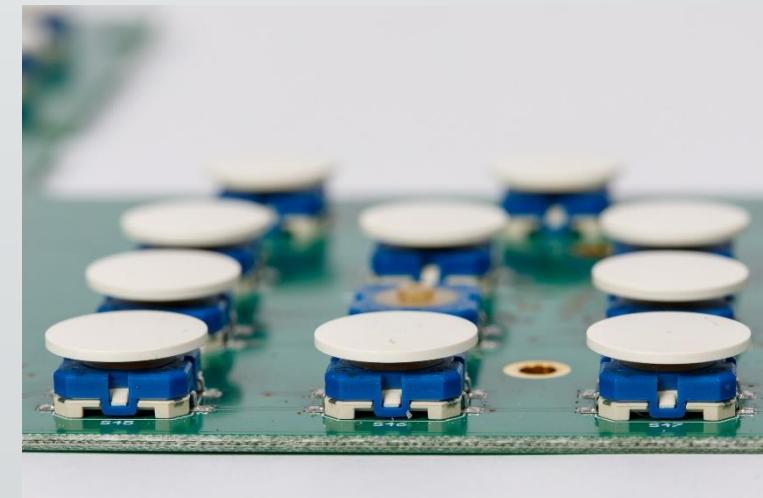
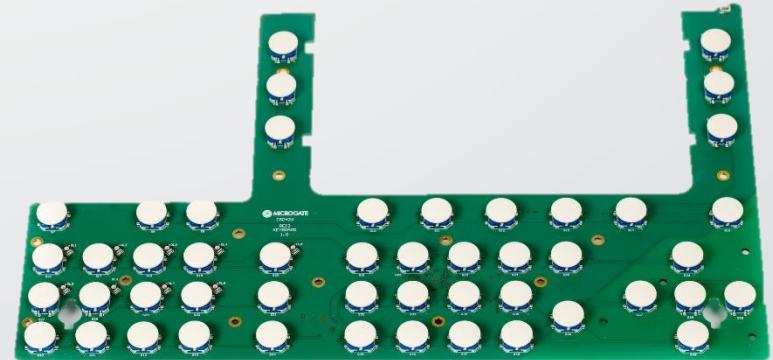
- Batteria agli ioni di litio
  - Tensione: 7,4V
  - Capacità: 13,6Ah
  - Facilmente sostituibile dall'utente
- Alimentazione 10-30 V DC
  - Stesso alimentatore del Rei2



# L'infrastruttura Hardware :

## La tastiera

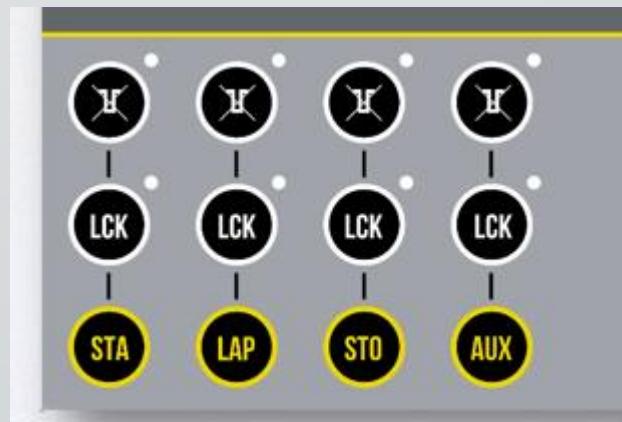
- Tastiera con tasti fisici e copertura in membrana protettiva flessibile.



# L'infrastruttura Hardware :

## Le linee di cronometraggio

- 4 linee principali su Boccola 4 mm
- 4 linee su presa normata Amphenol 6 poli in parallelo a boccole
- 4 linee su tastiera (indipendenti)
- Le linee fisiche hanno soglia di Schmidt-Trigger configurabile in alto e basso
- Le linee hanno noise filter configurabile (per evitare rimbalzi segnale tipo cancelletto di partenza o pulsanti)



# L'infrastruttura Hardware :

## Le linee di cronometraggio

- 16 linee via radio su 5 canali di frequenza diversa (due ingressi linkpod nativi e 3 sulle seriali)
- 80 linee tramite espansione Linkpod (identico a Rei2)



# L'infrastruttura Hardware :

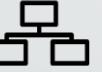
## Le periferiche

- 3 linee seriali completamente configurabili
  - Computer A
  - Computer B/Rei2 Net
  - Displayboard
  - Tutte con linee separate RS232 e RS485 con alimentazione +5V limitata a 150mA
- 5 input analogici 0-5V
  - Sensori di temperatura, umidità e anemometrici
- 6 I/O digitali 0-5V
  - Segnale sincronizzazione GPS in/out
  - Gestione semafori



# L'infrastruttura Hardware :

## La connettività

- 2 prese Ethernet 
  - Connessione a rete LAN
  - Rei Pro Net (non necessita di uno switch)
- 1 USB Device 
  - Connessione a PC
- 4 Prese USB Host 
  - Tastiera esterna
  - Mouse
  - Chiavette USB
- 1 Uscita audio MP3 



# L'infrastruttura Hardware :

## La connettività

- 1 Uscita Video HDMI
  - Mirror del display Rei Pro su monitor esterno
  - Sviluppi futuri prevedono uscite particolari come estensione del display Rei Pro (tabellone dei giudici equitazione....)
- WiFi per connessione a WLAN 
- Bluetooth per connessione a dispositivi mobile 



# Il nuovo approccio software

## Considerazioni iniziali

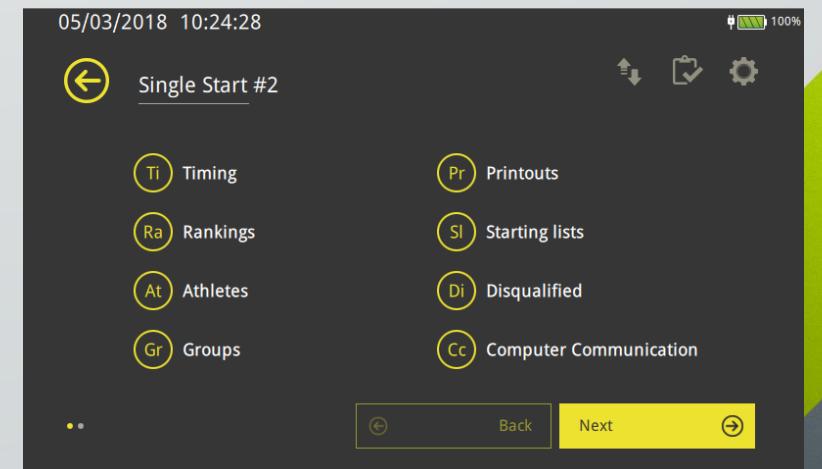
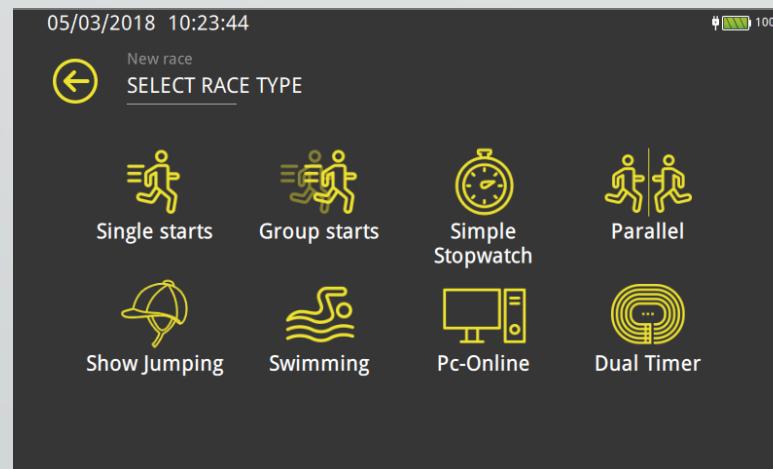
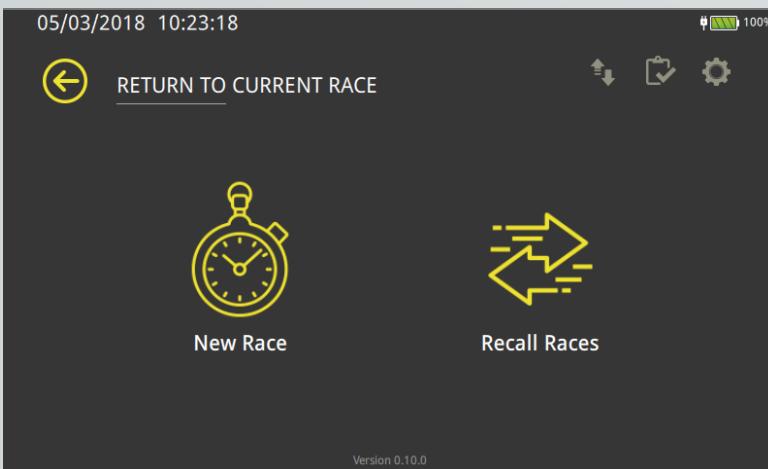
- Miglioramento navigazione nei menu
- Semplificazione impostazioni e configurazioni
- Importanza della continuità operativa per utenti REI2
- Miglioramento correzioni e funzioni di edit
- Portabilità delle configurazioni

# Il nuovo approccio software

## Le soluzioni adottate

### Miglioramento navigazione nei menu:

- Utilizzo icone e testo esplicativo
- Utilizzo navigazione touch
- Icône dedicate e sempre presenti per :
  - Sincronizzazione
  - Test Hardware
  - Configurazioni



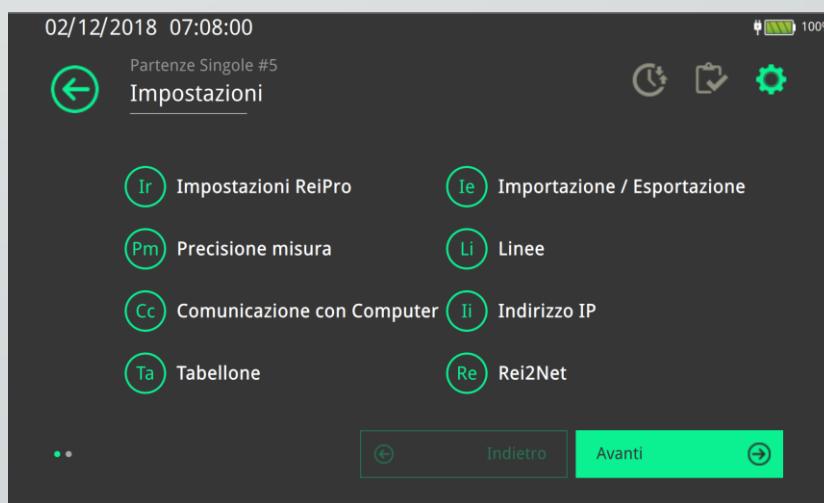
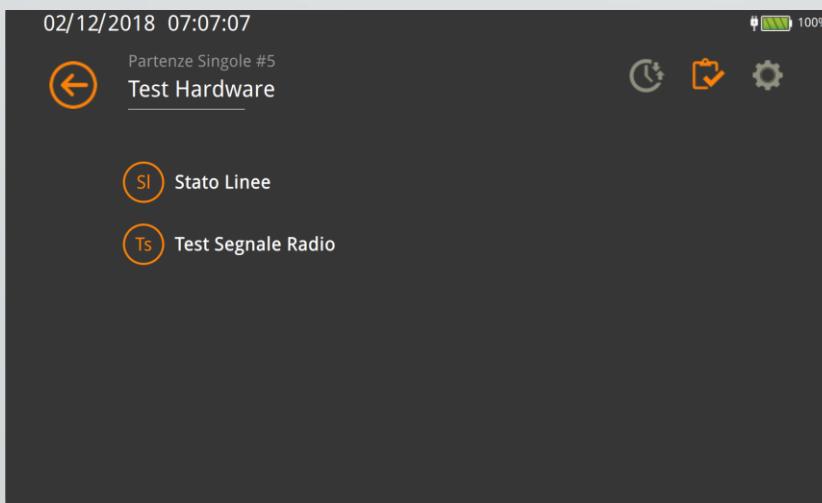
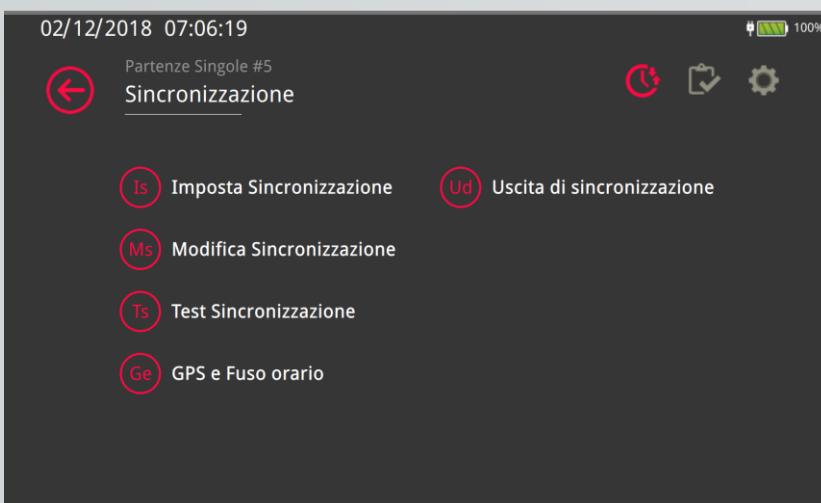
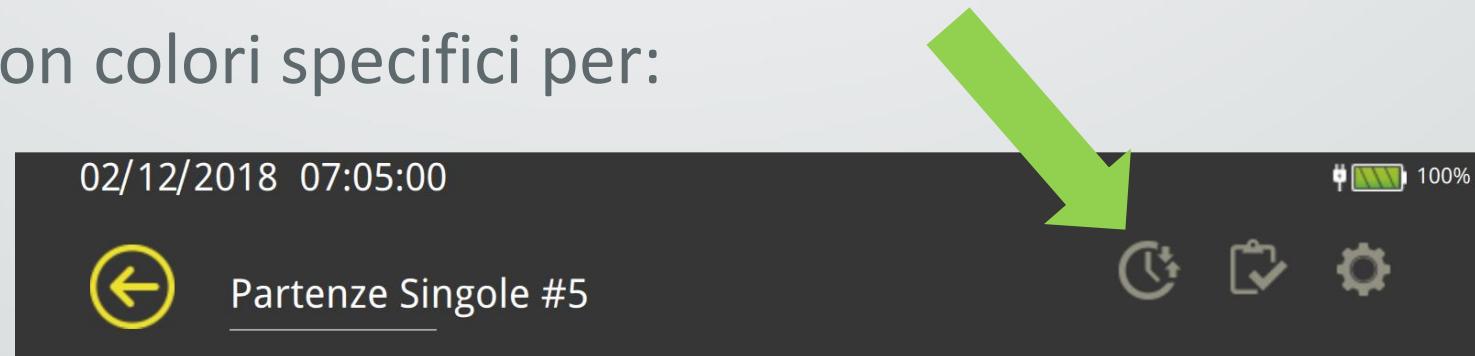
# Il nuovo approccio software

Le soluzioni adottate

Semplificazione impostazioni e configurazioni

Utilizzo icone dedicate con colori specifici per:

- Sincronizzazione
- Test Hardware
- Configurazioni

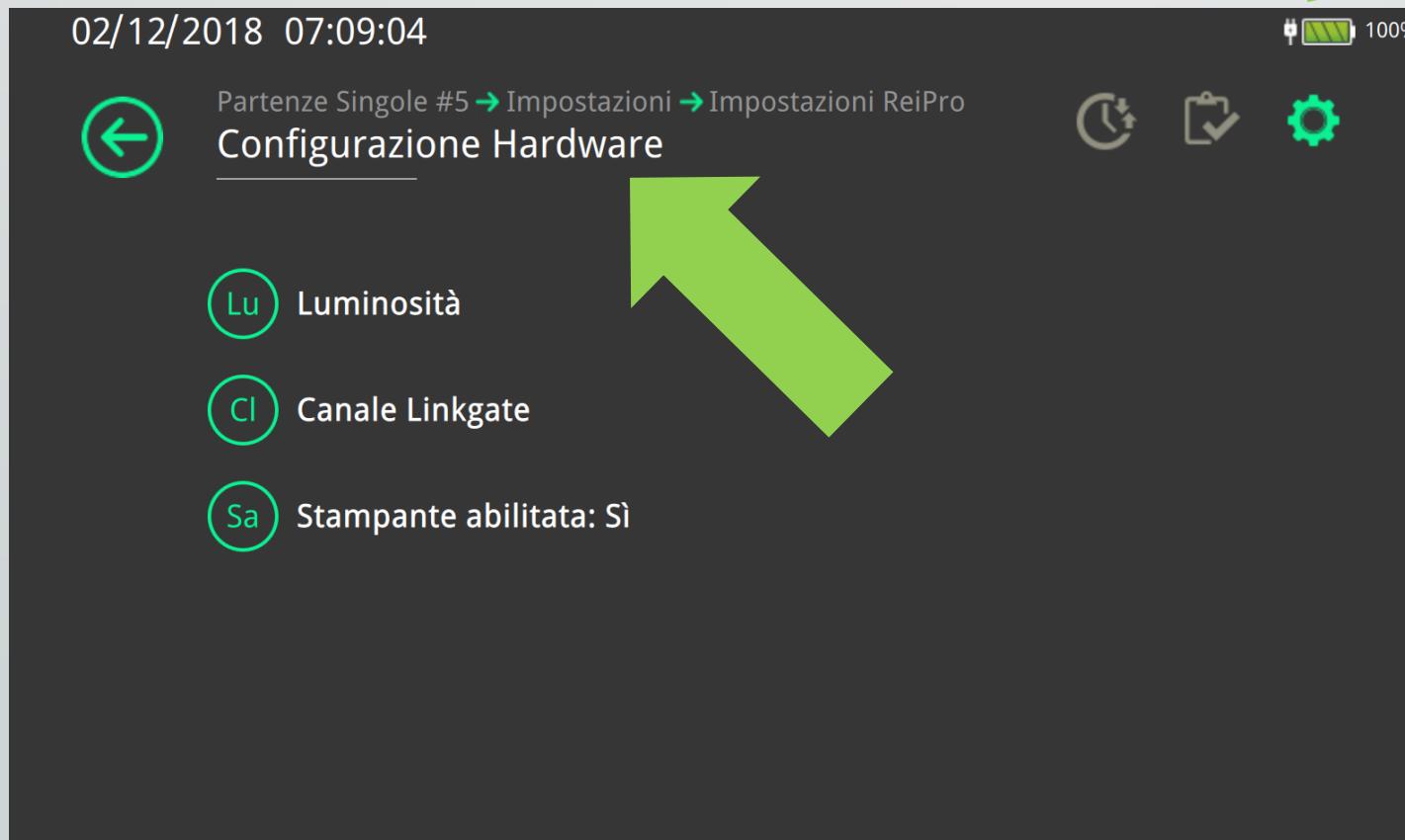


# Il nuovo approccio software

Le soluzioni adottate

Semplificazione impostazioni e configurazioni

- Utilizzo della status bar
- Utilizzo del navigation pane

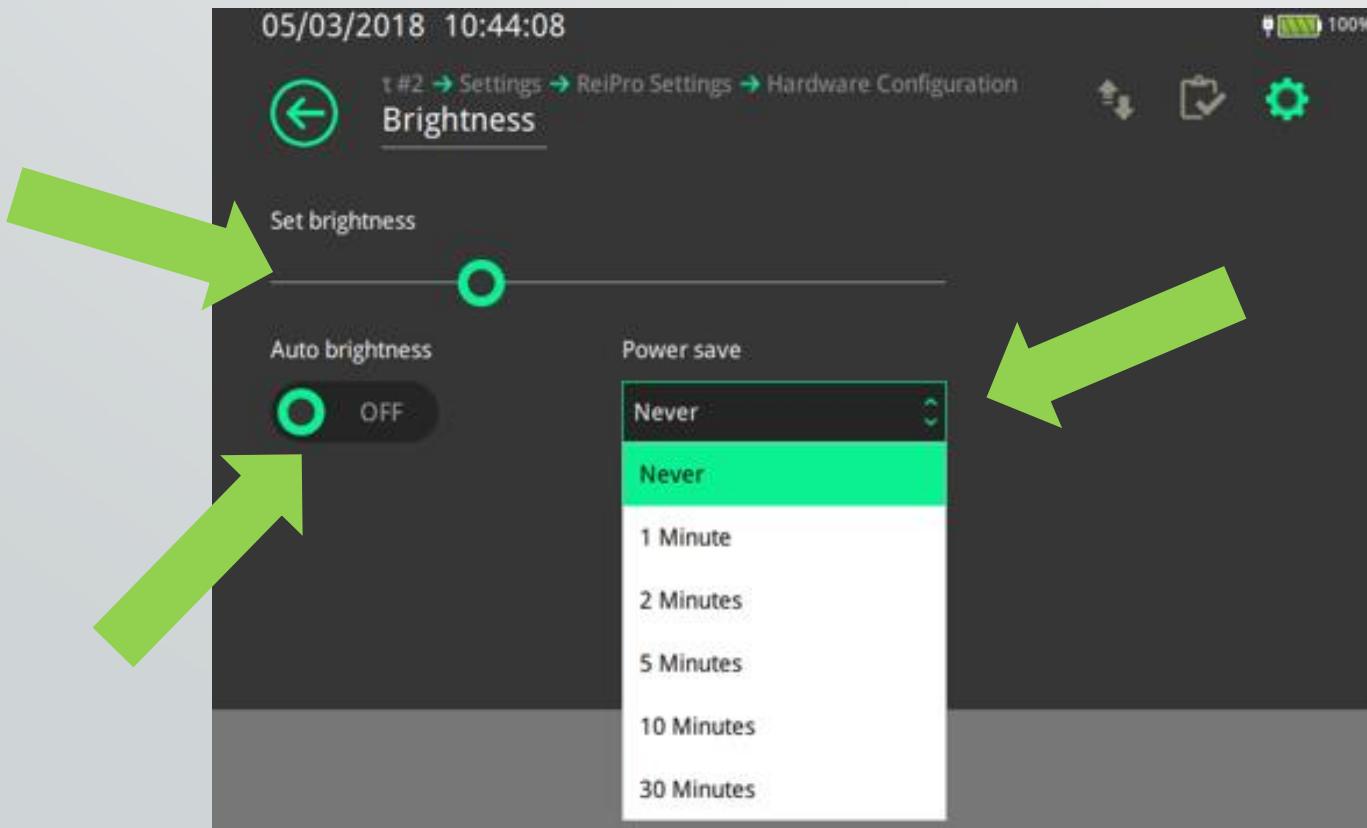


# Il nuovo approccio software

Le soluzioni adottate

Semplificazione impostazioni e configurazioni

- Utilizzo di elementi grafici
- Utilizzo scelte a tendina



# Il nuovo approccio software

Le soluzioni adottate

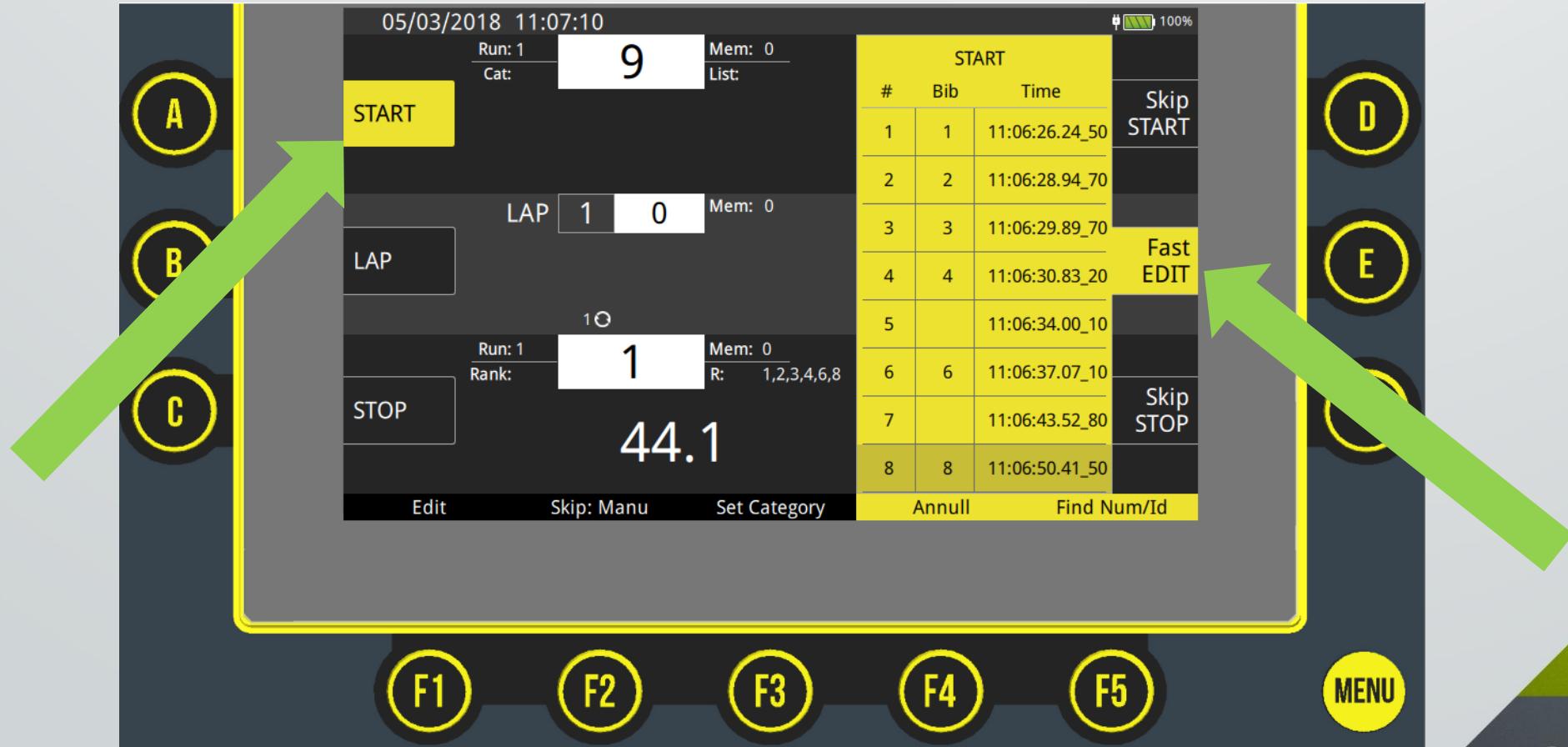
Importanza della continuità operativa per utenti REI2



# Il nuovo approccio software

Le soluzioni adottate

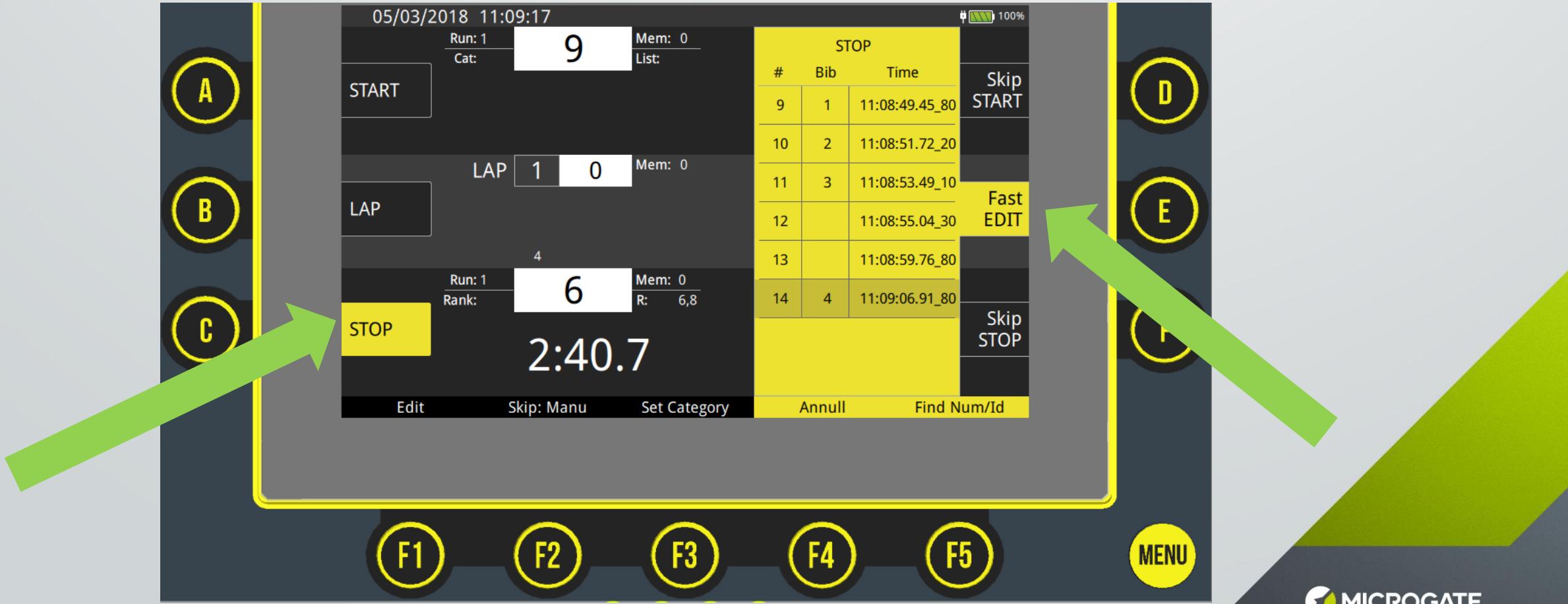
Miglioramento correzioni e funzioni di edit il FAST EDIT



# Il nuovo approccio software

Le soluzioni adottate

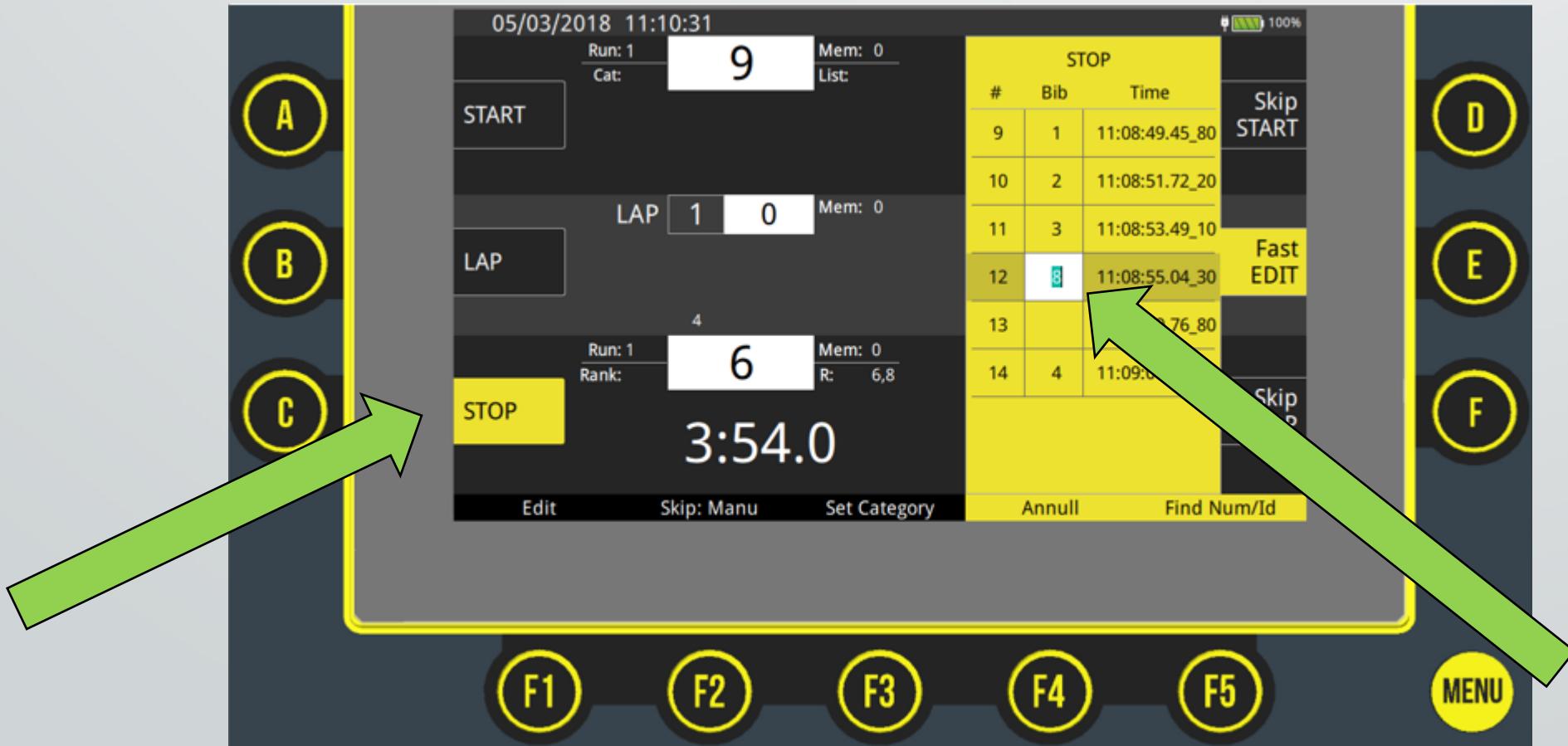
Miglioramento correzioni e funzioni di edit il FAST EDIT



# Il nuovo approccio software

Le soluzioni adottate

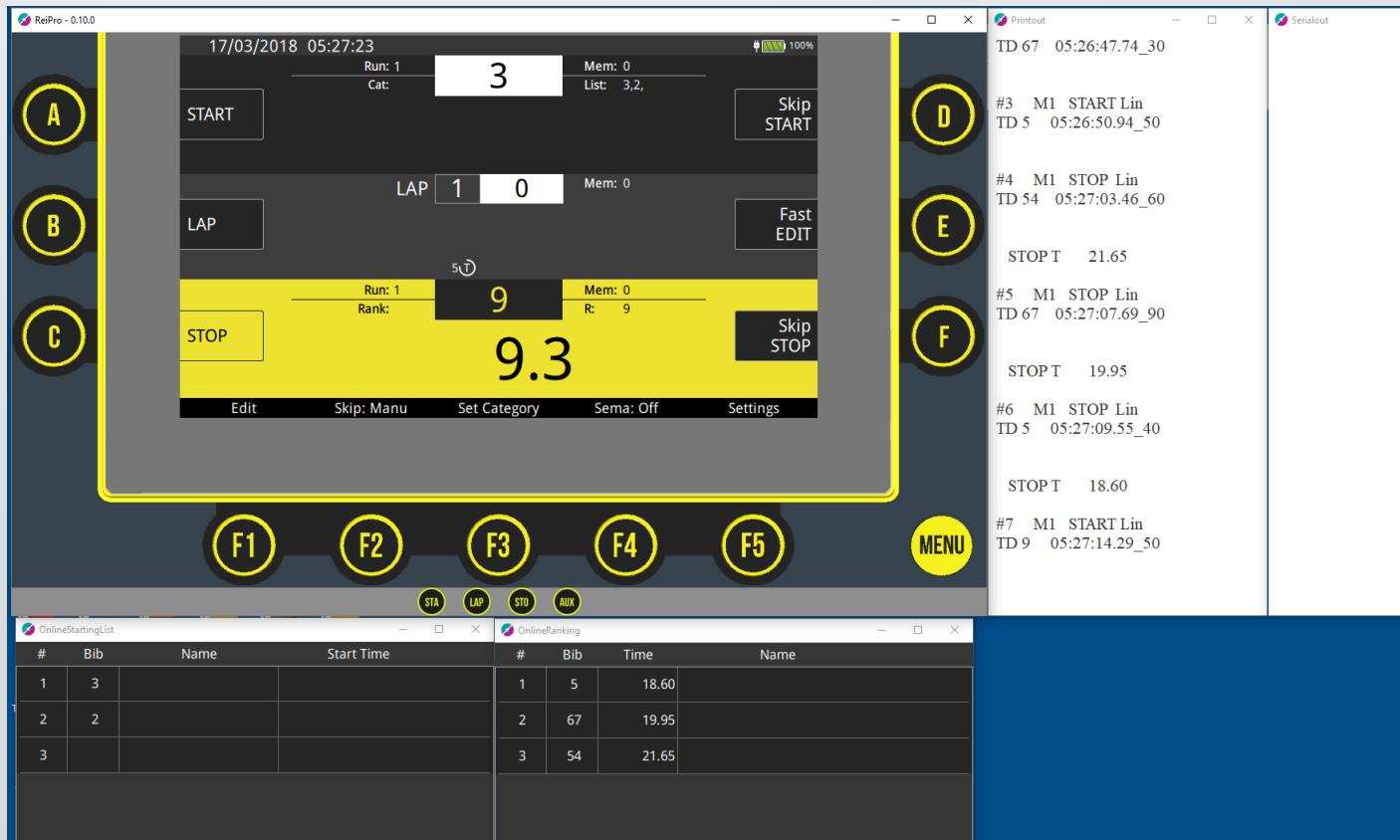
Miglioramento correzioni e funzioni di edit il FAST EDIT



# Il nuovo approccio software

## Alcune features interessanti

- Il simulatore su PC
- ReiPro over IP (private feature)
- La funzione di autocalibrazione della base tempi tramite GPS

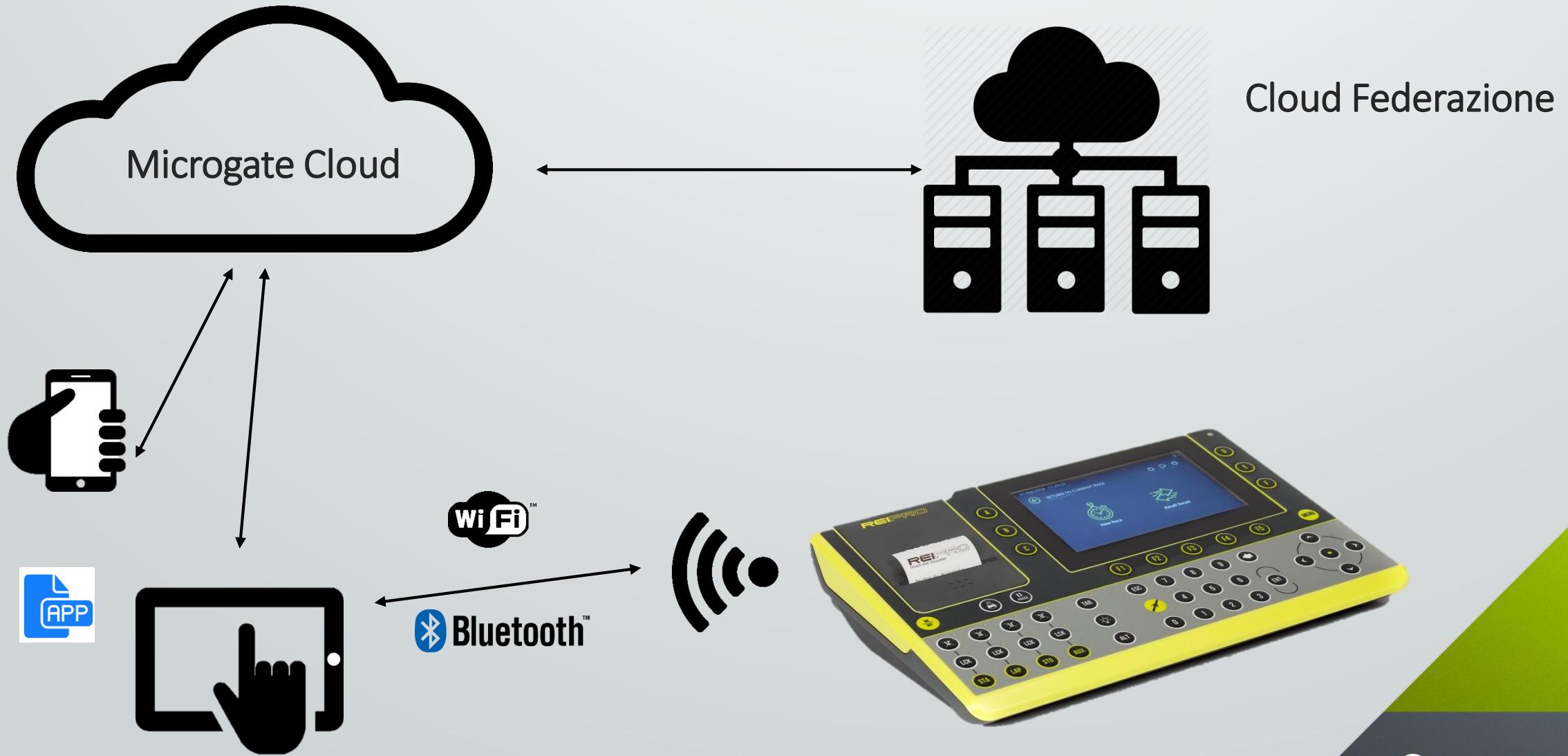


## Il nuovo approccio software

Cosa potrebbe riservarci il futuro

- Possibilità di connessione diretta a Internet (To be Verified)
- Possibilità di connessione stampanti USB e di Rete
- Possibilità di video recording over IP o over USB: la VAR del cronometraggio

# La comunicazione con il mondo esterno





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