Lynx System Developers, Inc.

Cross Country Triad & Dellinger Case Study

Cross Country Race Timing with Photo-Finish, Video, & RFID Chip Integration

The FinishLynx Triad is an integrated Cross Country timing system that combines three popular digital products to improve the speed and accuracy of meet results. The Lynx Triad makes Cross Country timing easier by combining **photo-finish**, **video**, and **RFID** chip results in a single interface.

The finish line at a cross country meet can be a confusing place with multiple finishers crossing at the same time. Athletes can finish fractions of a second apart and accurate team scores often depend on individual results. This makes fast and accurate identification crucial for any cross country meet.

Key Components of the Triad Solution

Part Number: 5L500

EtherLynx Vision Camera

Product Category: EtherLynx Vision
Full Product Description: Vision high sensitivity color camera. Max 1-D scan rate of 1000fps and 2-D preview.

Part Number: IDL-B95

Full-Frame IdentiLynx Plus Video Camera

Product Category: IdentiLynx
Full Product Description: Full-frame video camera that produces high resolution images that can be integrated in the FinishLynx Software.

Part Number: TL-IP30-00

Elite Reader Kit (1) 4-2.4M x 1.2M Mats

Product Category: Lap & Split Timing

Full Product Description: Includes Elite Reader, Mains Power Supply, Power Cord, Ethernet Crossover Cable, External Beeper, and 4 – 2.4M x 1.2M Mats

Part Number: TL-IP30-02

Lite Reader Kit 2-2.4M x 1.2M Mats

Product Category: Lap & Split Timing

Full Product Description: Includes Lite Reader, Battery Charger, Power Supply Cable, Ethernet Cable, USB Serial Console Cable, USB Flash Drive, 2 – 2.4M x 1.2M Mats

The Perfect Technology Triad in Operation

FinishLynx Software Screenshot: Simple- Powerful- Easy to Use

On-Screen Information Display

The FinishLynx software combines the data from the Transponder system(s), EtherLynx camera(s) and IdentiLynx camera(s) and displays all the information about the hardware on the screen.

Changes to any camera settings can be made quickly and easily.

Automatic Athlete Listing

A drop-down listing of the athletes in the order they crossed the finish line makes results production easy.
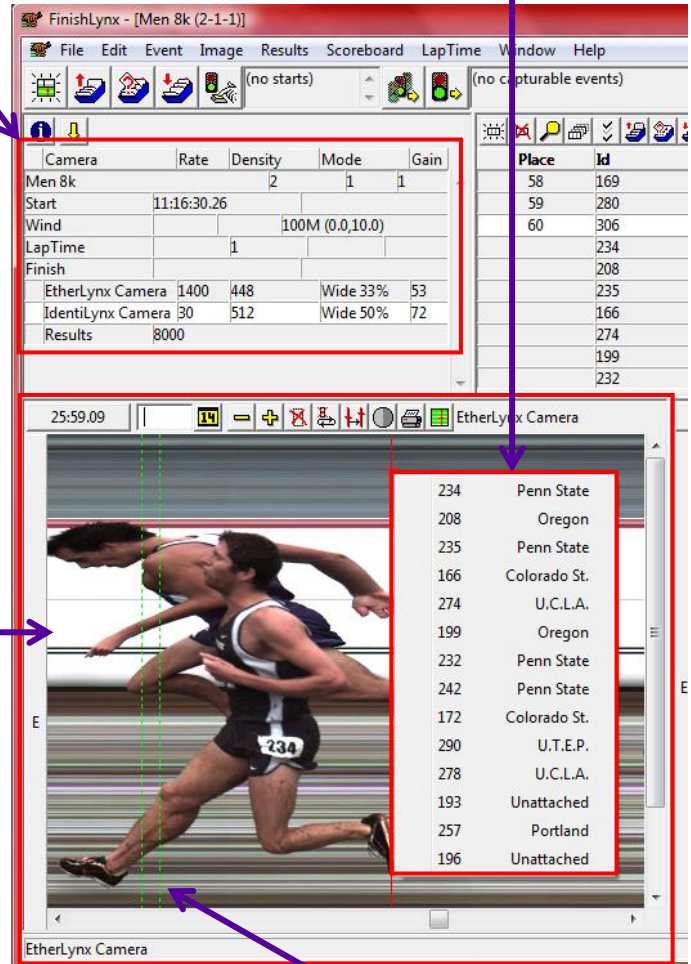
EtherLynx Vision Camera

The Vision camera is a powerful sports timing photo-finish camera with an array sensor that integrates with FinishLynx to produce high-speed results. The Vision has a number of innovative features to provide next-generation fully automatic timing.

Evaluating races with 100, 200, or 300+ competitors is no problem. Image capture time is virtually unlimited so you never have to worry about missing a competitor.

The image can be scrolled and zoomed so even the closest of races are easily resolved.

FinishLynx - [Men 8k (2-1-1)]

File   Edit   Event   Image   Results   Scoreboard   LapTime   Window   Help

(no starts)   (no capturable events)

Camera	Rate	Density	Mode	Gain		Place	Id
Men 8k		2	1	1		58	169
Start	11:16:30.26					59	280
Wind			100M (0.0,10.0)			60	306
LapTime		1					234
Finish							208
EtherLynx Camera	1400	448	Wide 33%	53			235
IdentiLynx Camera	30	512	Wide 50%	72			166
Results	8000						274
							199
							232

25:59.09   14   EtherLynx Camera

234	Penn State
208	Oregon
235	Penn State
166	Colorado St.
274	U.C.L.A.
199	Oregon
232	Penn State
242	Penn State
172	Colorado St.
290	U.T.E.P.
278	U.C.L.A.
193	Unattached
257	Portland
196	Unattached

EtherLynx Camera

Overlay RFID Transponder Times

See the lines and instantly verify that every athlete's transponder has been recorded by the system.

Sports Results Technology

LYNX

Accurate Times from Photo-Finish

When times are read from the photo-finish image, they are accurate and precise. Finish order generated by Transponders is based on the location of the tag, but photo-finish times are accurately read from the position of the torso for precise results.

IPICO Elite Reader

The Elite reader produces times from detection mats covering a 10 meter wide finish line. The LITE reader can cover up to 5 meters. Both have built-in rechargeable batteries.

First Name	Last Name	Affiliation	Time	Cum. Split Time	Laps
Andrew	Mauck	Colorado St.	25:54.94	25:54.99	4
Kevin	Sullivan	U.C.L.A.	25:58.55	25:58.69	4
Parry	Higginson	Weber State	25:58.95	25:58.95	4
Brian	Fuller	Penn State		25:58.96	4
Diego	Mercado	Oregon		25:59.60	4
Tim	Johnson	Penn State		26:01.83	4
Jeff	Holt	Colorado St.		26:08.26	4
David	McDonald	U.C.L.A.		26:08.59	4
Vincent	D'Onofrio	Oregon		26:14.07	4
Owen	Dawson	Penn State		26:16.65	4

25:59.11   IdentiLynx Camera

Lap Counting

Transponders can record lap counts automatically. Also, you can set up a "too fast" and "too slow" time for each split and the system will warn you if an athlete is missed.

Precise Image Control

Images are time-indexed and can be zoomed, advanced, or rewound frame-by-frame.

IdentiLynx Plus Camera

The full-frame video images confirm athlete identification with ease. Video footage can be cropped and exported to AVI files or JPGs.

## Dellinger Case Study – Event Description

The Dellinger Invitational Cross Country Meet is a major collegiate cross country competition hosted by the University of Oregon, consisting of a men's 8 kilometer and a women's 6 kilometer race with athletes competing from 10 schools. The event is held on a looped course that circles a section of a golf course. The women's race is three loops, the men's course is four loops – as shown on the right.

Solution – Overview

Producing timely and accurate results for the sport of Cross Country has always been challenging. With so many athletes in a race, the ability to identify competitors accurately and rapidly, to provide accurate times and finish order, and to link every athlete with their respective finish times, has almost seemed beyond the scope of any single technology. But by linking three complementary products together, Lynx has created a synergistic solution that is greater than the three systems working independently.

Lynx solved the problems inherent in the sport by seamlessly linking a triad of products: EtherLynx photo-finish, IdentiLynx full-frame video, and IPICO RFID transponders.

1. **EtherLynx cameras** ensure accurate results and a visual record of every athlete crossing the finish line as a visual confirmation of transponder readings.
2. **IdentiLynx cameras** produce full-frame video images which make verification of athlete identification easy.
3. **RFID transponder technology** provides rapid, real-time athlete identification.
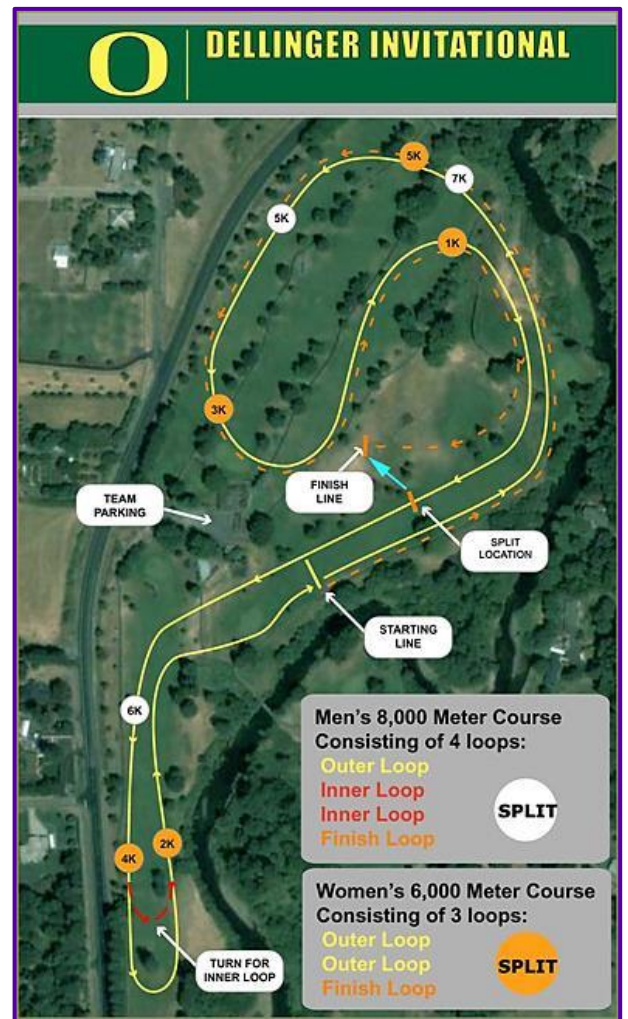
Solution – Hardware and Software

✓ FinishLynx Timing and Photo-Finish Software
  o LapTime Software Plug-in
  o Network Com Port Software Plug-in
✓ EtherLynx Photo-Finish Camera
✓ IdentiLynx full-frame video camera
✓ IPICO transponders and detection system
  o Elite Reader Kit for split point (10 meters wide)
  o Lite Reader Kit for finish line (5 meters wide)

The schematic on the right shows the components used and how simple the interconnections are between them. All the separate data collection devices are linked to an Ethernet hub by a simple RJ45 cable and information is combined effortlessly by the FinishLynx software:

- EtherLynx Camera
- IdentiLynx Plus Camera
- IPICO Elite Transponder System
- IPICO Lite Transponder System
- RadioLynx Wireless Start System