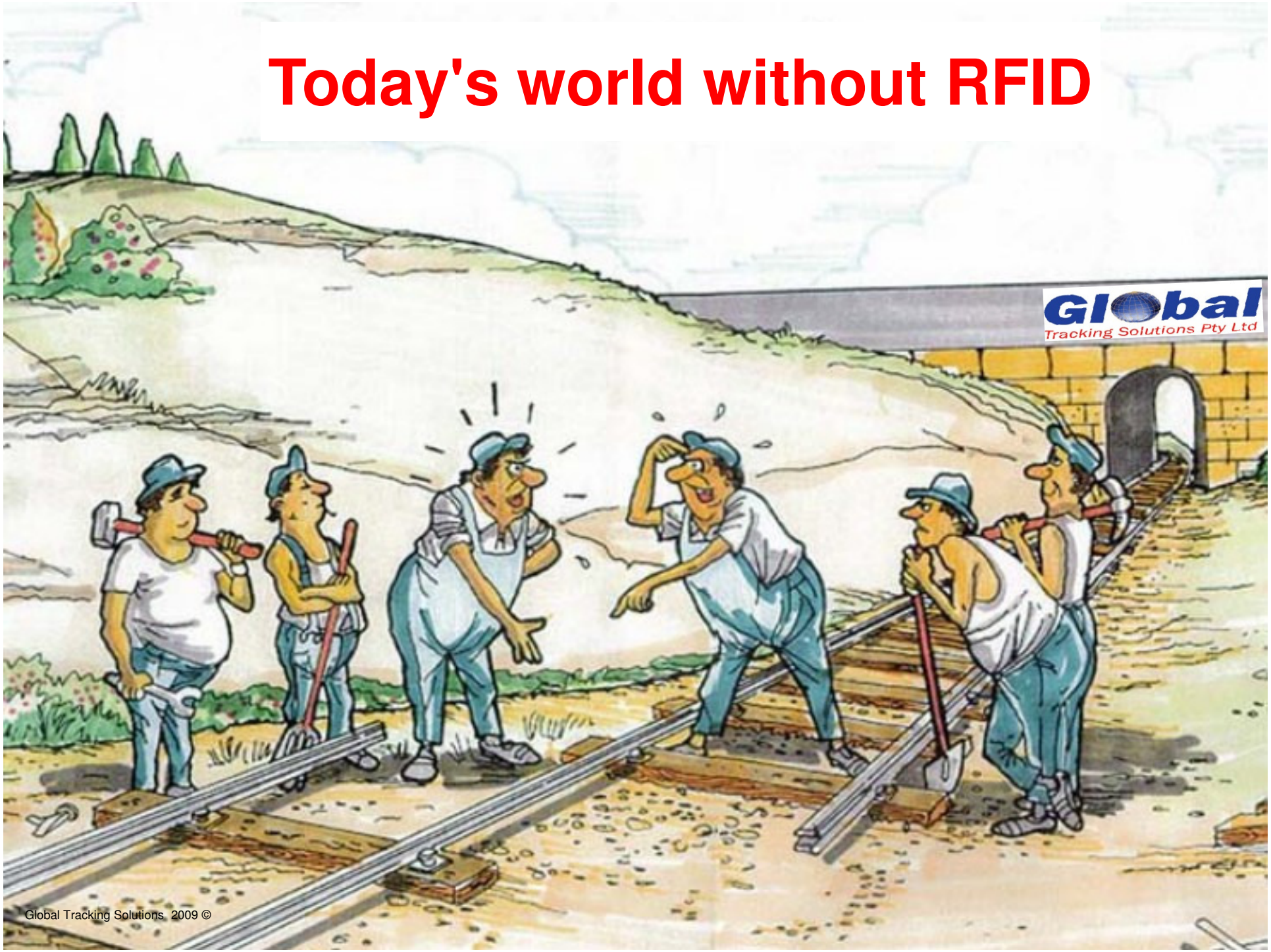
Today's world without RFID



Explosives tracking in tomorrow's world with RFID

- Current tracking and recording of explosives
- RFID will exceed the EU and Brazilian explosives requirements
- Why the explosives industry requires RFID and the Explosives Tracking Code (ETC)
- GTS - RFID explosive tracking systems
- How RFID will allow explosive detonators to be tracked 24/7
- Cost benefits of RFID v Other systems used in explosives tracking

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Current tracking and recording of explosives

- **In Australia we have two of the largest explosives companies in the world and today:**
  - **Explosives management is done by a paper base system**
  - **No explosive box has tamper proof management systems**
  - **Some emulsion cartridges are pack by approx weight (25kg)**
  - **High explosive licences are issues in kg's and management is done by boxes**
  - **No detonator has unit level ID in any form**
  - **No cartridge or booster has unit level ID in any form**

- **In 2007, Australia had 228 unauthorised initiation of an explosives device:**
  - **This does not take into account explosives that were stolen or found**

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RFID will exceed the EU and Brazilian explosives requirements

- **Absorb all current barcode information into an RFID tag**
- **Read/write data storage excess all other forms of technology**
- **Electronic Proof Of Delivery (EPOD) via electronic signature**
- **Suitable for by both civilian and military**
- **Able to identify itself as an explosives RFID tag**

*The EU example of an electronic readable identification in barcode and/or matrix code format that relates directly to the alphanumerical identification code.

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Why the explosives industry requires RFID and the Explosives Tracking Code (ETC)

- **An independent standard based on current industry and world International Standards (ISO) requirements**
- **Place key data at any given point on an approved RFID tag**
- **Provides manufactures and operators read/write sections**
- **Able to identify itself as an explosives RFID tag**

Locked @ RFID manufacture (20 bytes) for explosives consumption

Locked @ Explosives manufacture (84 bytes)

Free data (16 bytes)

The electronic signature of the shot firer assigned the product (8 bytes)

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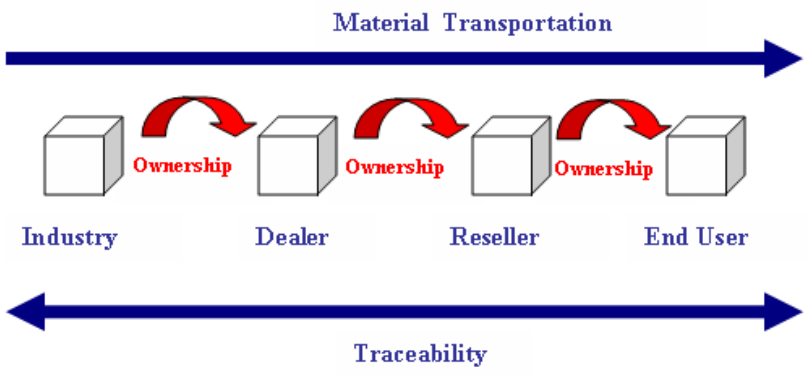
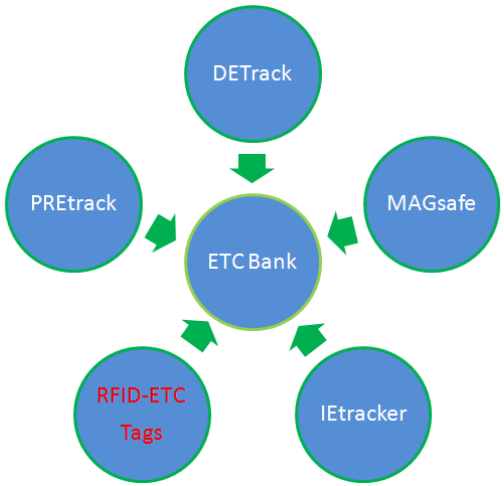
GTS - RFID explosive tracking systems

- **Bio-metric access controls**
- **Explosives and risk management systems build in**
- **Exceeds EU and Brazil models with down hole accountability**
- **Design to accept RFID – ETC protocol data 24/7 world wide**
- **Design to allow real time tracking based on cross-referencing**





Brazil traceability regulated material traceability architecture concepts

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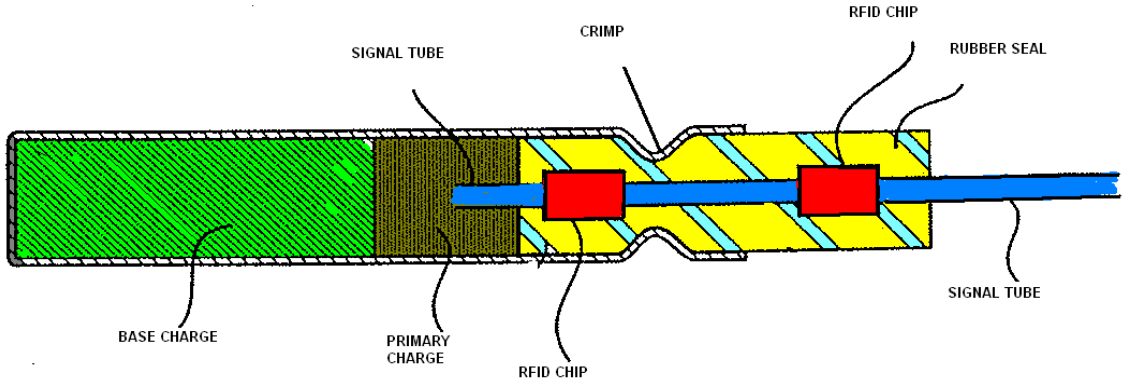
How RFID will allow explosive detonators to be tracked 24/7



DETONATOR WITH RFID CHIPS EMBEDDED

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Cost benefits of RFID vs other systems used in explosives tracking

- **Cost of barcodes, labels, laser are more cost effect to apply than RFID, However**
  - **Cost of real time data in manufacturing**
  - **Benefits of unit level tracking**
  - **Cost saving of RFID scanning vis readers**
  - **Efficiency in leaving the box unopened**
  - **Willingness to change due to more nonintrusive technology**
  - **Electronic tracking**

		Time		Costs	
		Barcode	RFID	Barcode	RFID
Data record of magazine movements		2460	66.7	$ 2,050.00	$ 55.56
Stock take at a box level		3510	100	$ 2,925.00	$ 83.33
Weekly data record out of magazine					
Boosters	out	615	34.2	$ 512.50	$ 28.47
Cartridges	out	1575	35	$ 1,312.50	$ 29.17
Boosters	In	300	50	$ 12.50	$ 41.67
Cartridges	in	1500	250	$ 62.50	$ 208.33
Total time		9960 min	536		
based on a 10.5 hour man day		**15.8** days	**0.9**		
Total costs				**$ 6,875.00**	**$ 446.53**

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Questions and comments please

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