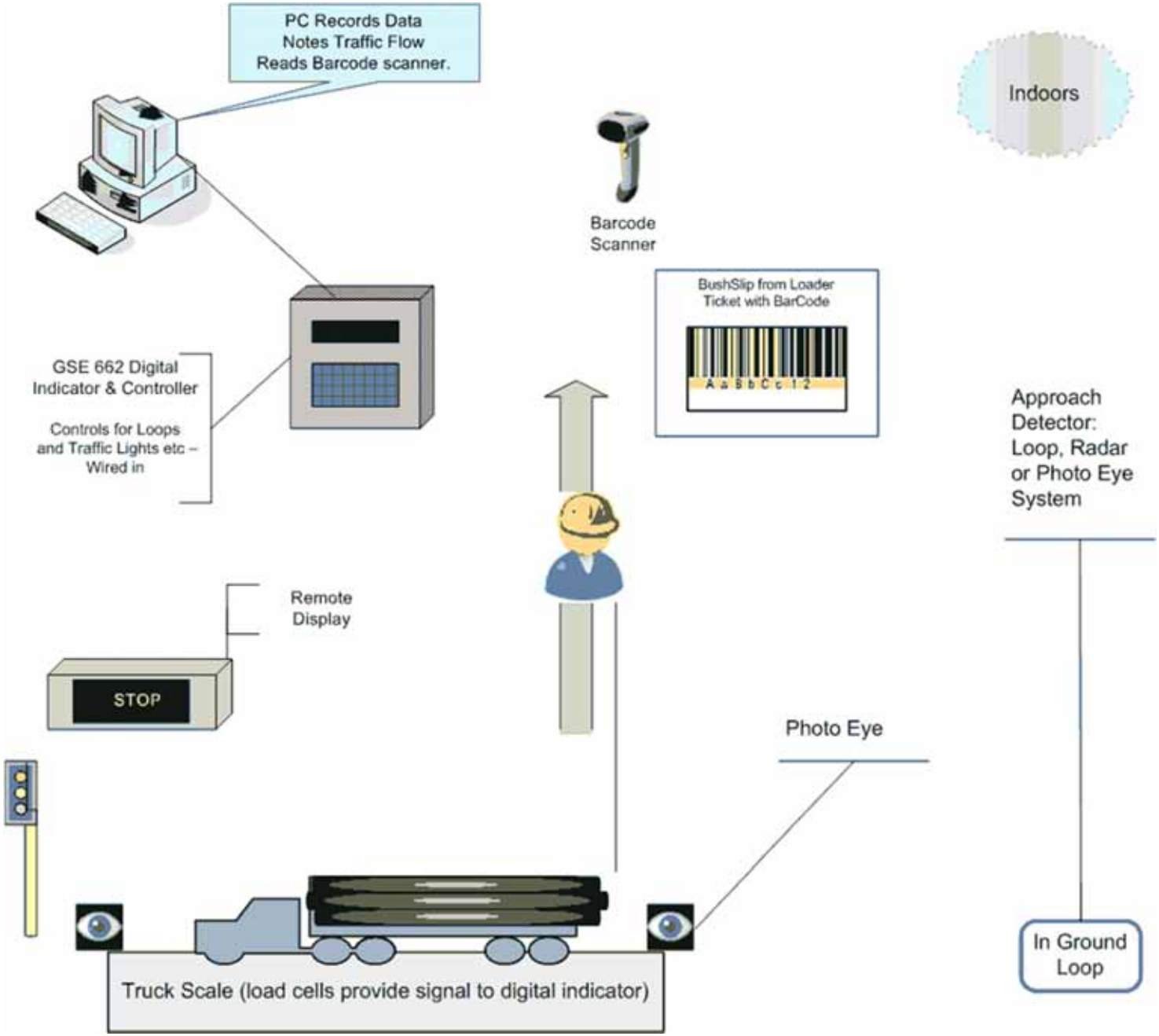
Trucker Operated Weigh Scale Systems

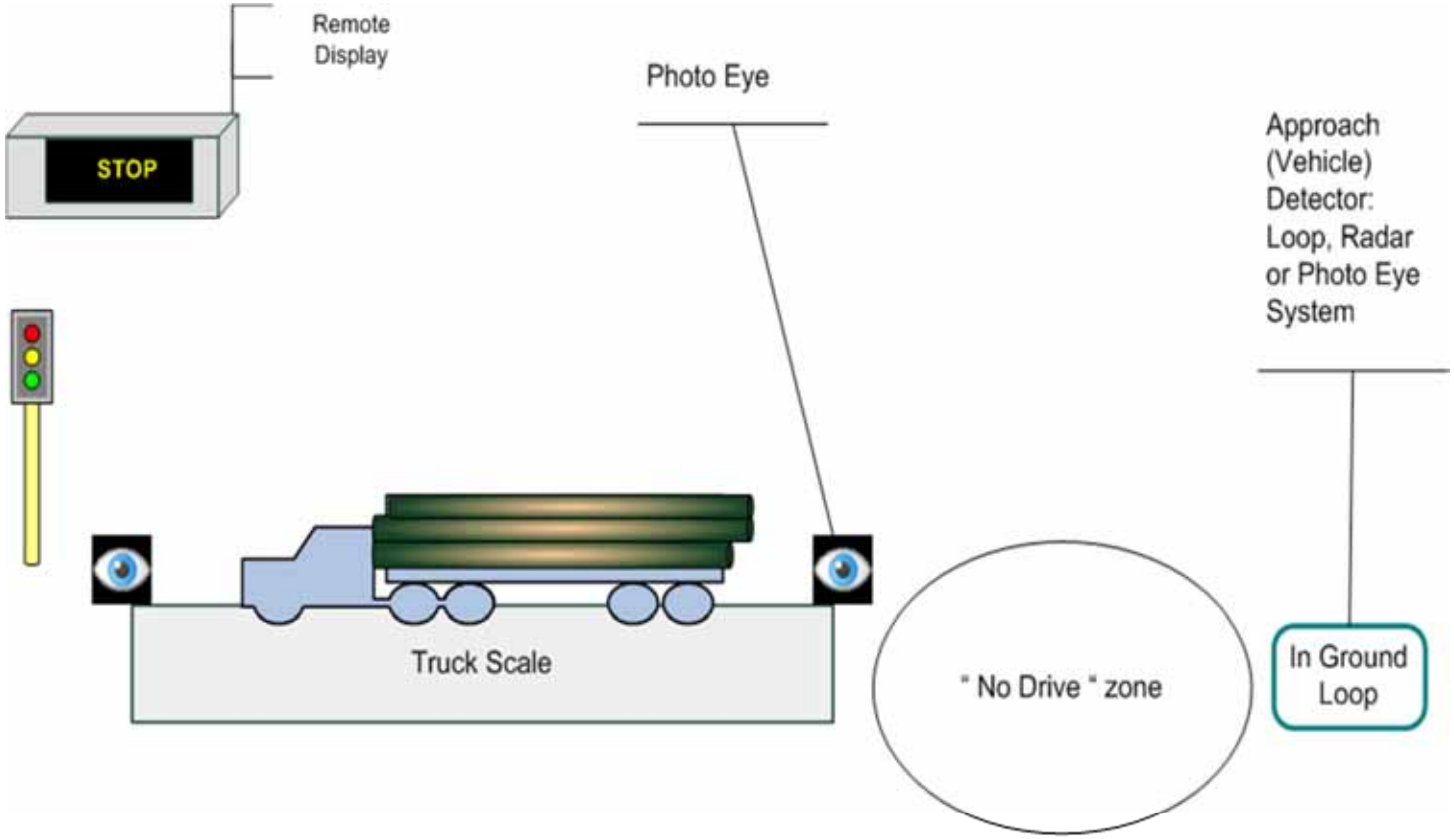
PACIFIC

PACIFIC INDUSTRIAL SCALE

Trucker operated Scale Systems


PC Records Data
Notes Traffic Flow
Reads Barcode scanner.
Indoors
Barcode
Scanner
BushSlip from Loader
Ticket with BarCode
GSE 662 Digital
Indicator & Controller
Controls for Loops
and Traffic Lights etc –
Wired in
Approach
Detector:
Loop, Radar
or Photo Eye
System
Remote
Display
STOP
Photo Eye
In Ground
Loop
Truck Scale (load cells provide signal to digital indicator)

Close up of Scale & Controls



Sequence of Operation

1) Traffic lights are red.
2) Driver approaches scale, gets into the Vehicle Detect Range.
3) Check that the scale is empty and the weight is reasonably close to zero.
4) If so, we turn the traffic light goes green.
5) We will allow the trucker a minute or so to drive on the scale
6) Once the truck is over a trip weight, system turns traffic light red.
7) When the truck stops, the driver will check that his truck is fully on the scale and go into the scale shack and provide information about his load.
8) At that point, the computer system will determine whether the load is to be sampled (stick scaled), and the driver may directed to a particular area to unload.
9) We typically print some sort of “load advice slip” for the trucker.
10) Lights flash, trucker drives off

Main Components

- 1. Truck Scale
- 2. Hardware to control access to scale and sensors
- 3. Control System Software – understands traffic flow.
- 4. Data recording hardware & software – part of the scale software

2 Approaches

- 1. Stand alone Hardware Software Systems
  - Used with LIMS (3 Log)
- 2. Integrated systems.
  - More flexible in terms of types of hardware & software.
  - Relevant if your business systems do not directly interface to the scale

Truck Scales

- Platform rests on:
  - Load cells – pressure sensors
- Digital Indicator – sums load cells and makes sure weight is not changing “quickly” – this is called stability…
  - May be smart & may have controls for hardware
  - E.g. GSE 660 series

GSE 660 Series Indicators

I. In Ground Loops

Pro:	Con:
Signal is reliable and easy to interface to. Vehicles are the only likely thing to generate a positive.	Expensive to install. - must be mounted underground e.g. In concrete. - disruptive to operations to install
Hard to damage. Does not usually need to be serviced	If the unit itself is damaged (as opposed to wiring), it is expensive and disruptive to re-install.
Long life.	
Unit itsef is inexpensive (less than $500)	

Photo Eyes Mounted at Scale End

II. Photo Eyes

Pro:	Potential Cons:
Easiest to see and understand the “zone of detection”	Things other than vehicles will generate positives. For example, a person can block the photo eye, and mud can block the eye.
Easy to service	Vehicle detection usually is done some distance from the scale – you will need to have posts some distance from the scale. This can be expensive or worse, the posts can hit by trucks.
Usually easy to install.	Many mills will use suitable models in the mill, so will have spares available immediately.
Unit itself is inexpensive (less than $500)	

Short Range Radar

Pro:	Potential Cons:
Less problems with photo eyes with detection of inappropriate objects.	If you have other traffic near the scale – e.g. Fork lifts driving beside the scale, etc. Then you will need to tune the detector range to ensure that the detect range and sensitivity are appropriate for your application. The tuning on the models we have tested tends is set as “Low / Middle / High”. More time consuming to tune, than the methods above.
Physical placement is easy – typically mount on a pole near the scale.	The zone of detection is not visible, and is not entirely intuitive either.
Fairly large zone of detection that can be set to be close to or fairly far from the scale as appropriate. (this can also be a “con”)	The unit itself is a little more money than loops or photo eyes.
Good for service - Does not seem to require field adjustment often.	

Short Range Radar – about 4” high

RF Tags 1

- Short or Long Range – short are much easier to deal with in my view.
- Dumb or Smart
  - Dumb just carry a number that your software must reference
  - Smart ones could carry ticket, trip information, these can be written to by other devices.

RF Tags 2

- Cost of “dumb short range” is modest – say < $5/tag, $500-1,000 for reader.
  - Very tough & reliable.

Data Carrying Systems

- RF tags are an example – they can just have a single number – that say references a vehicle or a pre-existing ticket. Very good for identifying a Bill of Lading or a Vehicle.
- Or, they can carry data – GPS data, an entire load slip.

Example of data carrying – Bar Codes

- 1 D – Bar Codes – like what you see in a grocery store.
  - There are many types, but generally won't hold more than about 25 characters.
  - They are less reliable than RF tags, but very cheap to read.
  - They can fail!

Bar Codes continued (2 D)

2 D Bar Codes

- Most are “PDF 417” – pretty reliable, but can be misread or fail to read because of smudges.
- I believe these are pretty common in Alberta as load slips, and we have some installations in BC.
- We have other non-forestry installs with these.

The future for data carrying?

- Probably our friend the Cel Phone.
- Many applications of this now.