GIS-T Symposium

Integrating Traffic Data

Into the Enterprise Database

18th March 2003

Overview

- **Traffic data integration**
  - Vision
  - Software
- **Traffic data lifecycle**

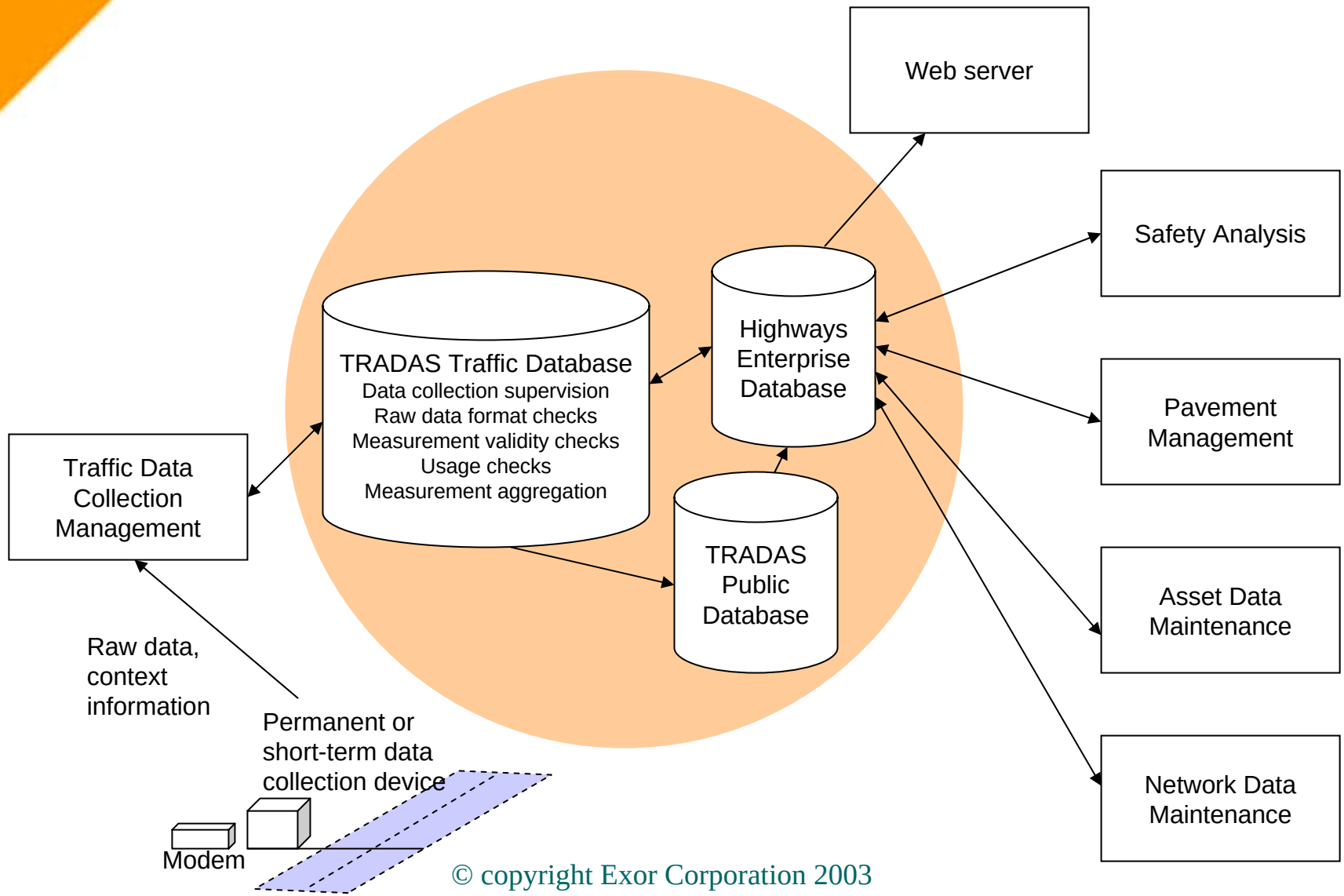
Why Traffic Data Matters

- **Unifying element that binds virtually every DOT decision whether**
  - deciding on the carrying capacity of a bridge,
  - how best to maintain a highway, or
  - how to prevent accidents at a particular intersection.
- **The analysis, integration, and accessibility of quality traffic data are crucial to the effectiveness of decisions made throughout a highway agency.**

Traffic Data Stovepipe

- **Justified stovepipes?**
  - Specialized skills
  - Departmental responsibility
- **Integrated stovepipes?**
  - Preserve specialization
  - Remove isolation
- **Two-way street**
  - Integrate traffic data
  - Make enterprise data support traffic data collection

Integrated Vision

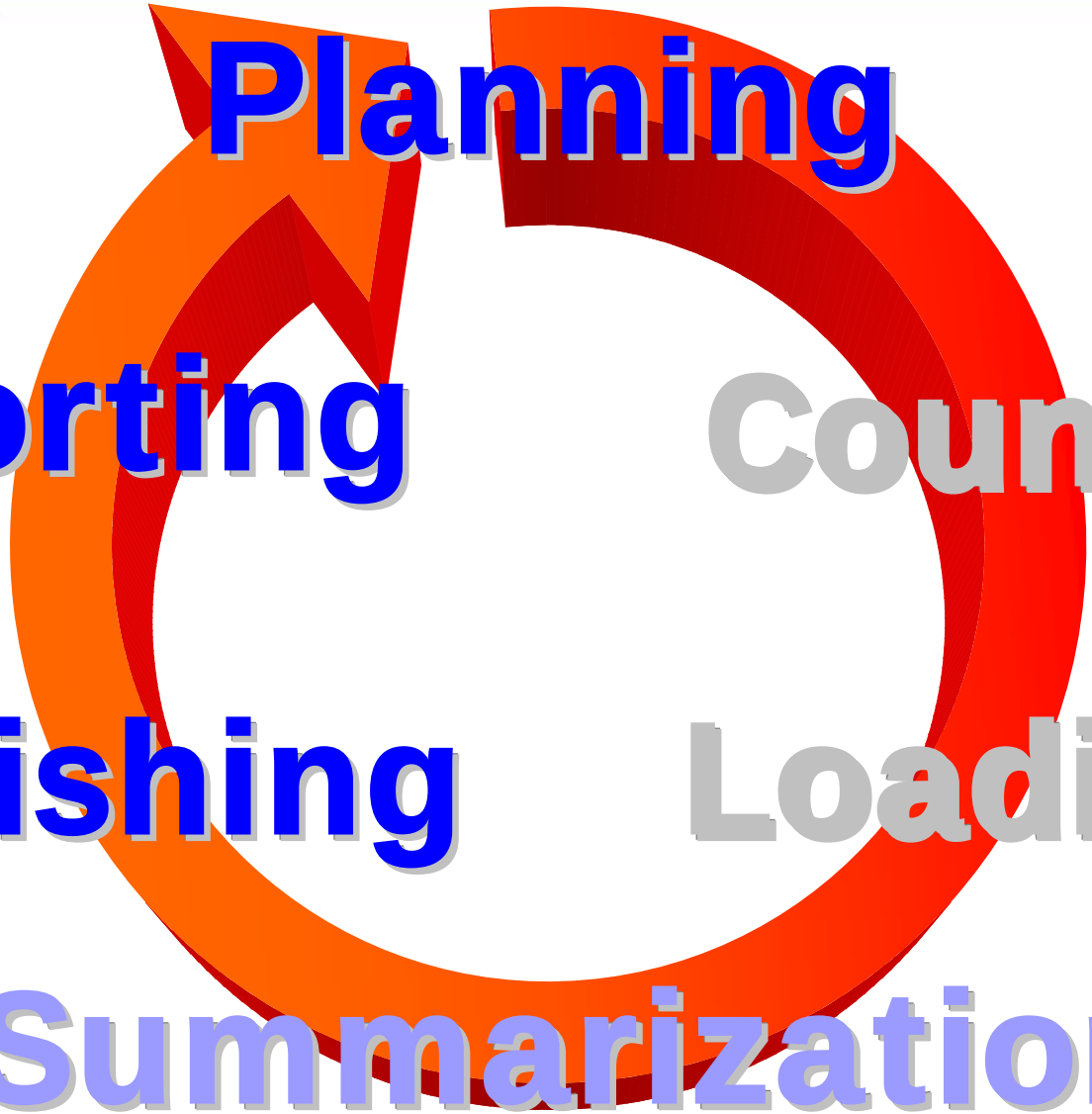


COTS Software Context

- **Interface between TRADAS and Highways**
- **TRADAS—specialist traffic monitoring software**
  - Loading/validation, summarization, publishing, reporting
- **Highways—specialist highway management software**
  - Enterprise database, network data model, integrated asset database
- **MRWA—bought both and needed interface**
  - Close relationship between firms, much thought about interface
- **Traffic Manager was born**

Traffic Data Lifecycle

Integration Phases

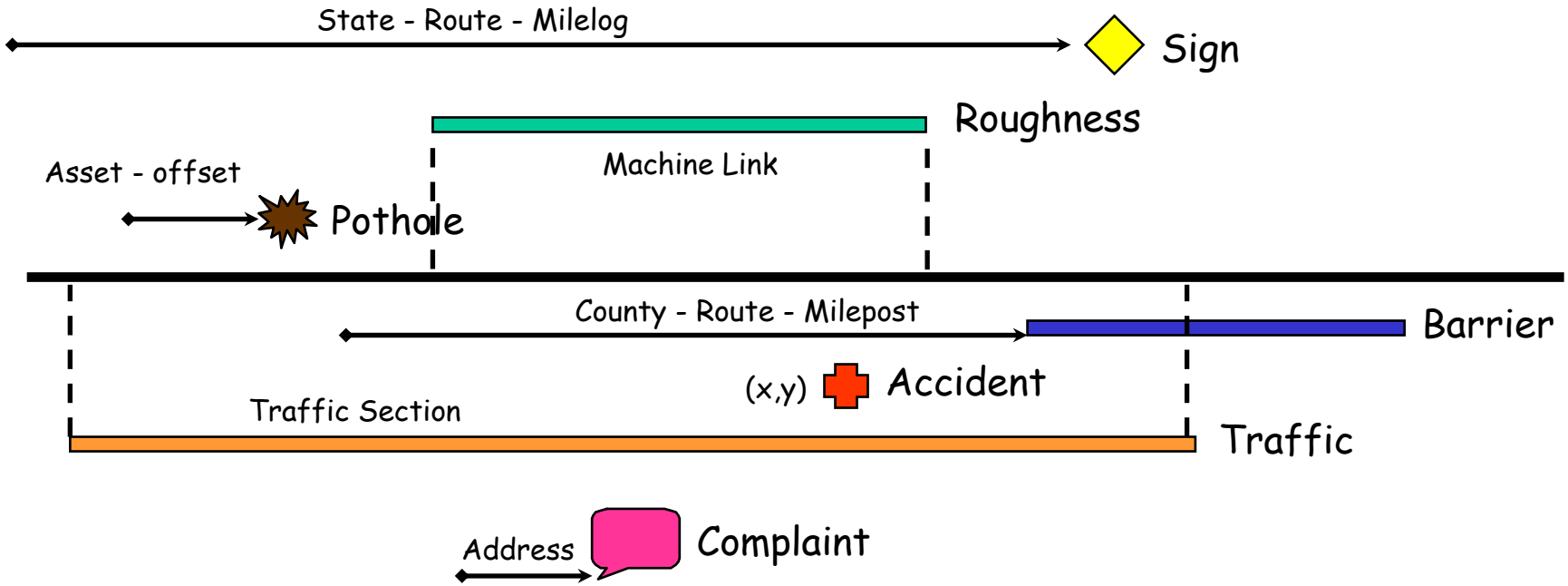


Traffic Data Lifecycle

Planning with Traffic Sections

- **Define traffic sections on network**
- **Synchronize Count Sites Traffic Sections**
  - Match using dynamic segmentation
- **Plan counts to provide section statistics**

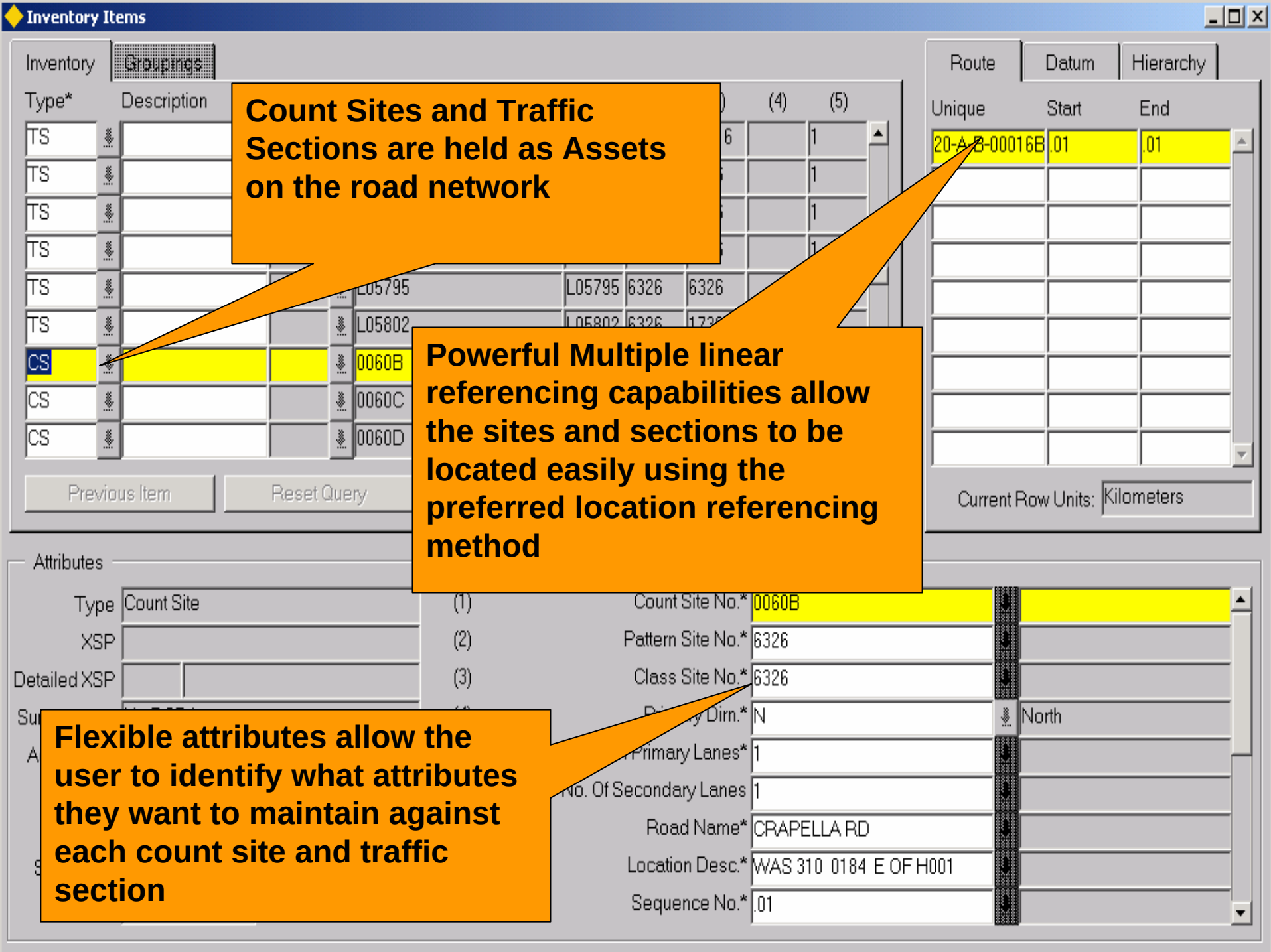
Why Linear Referencing



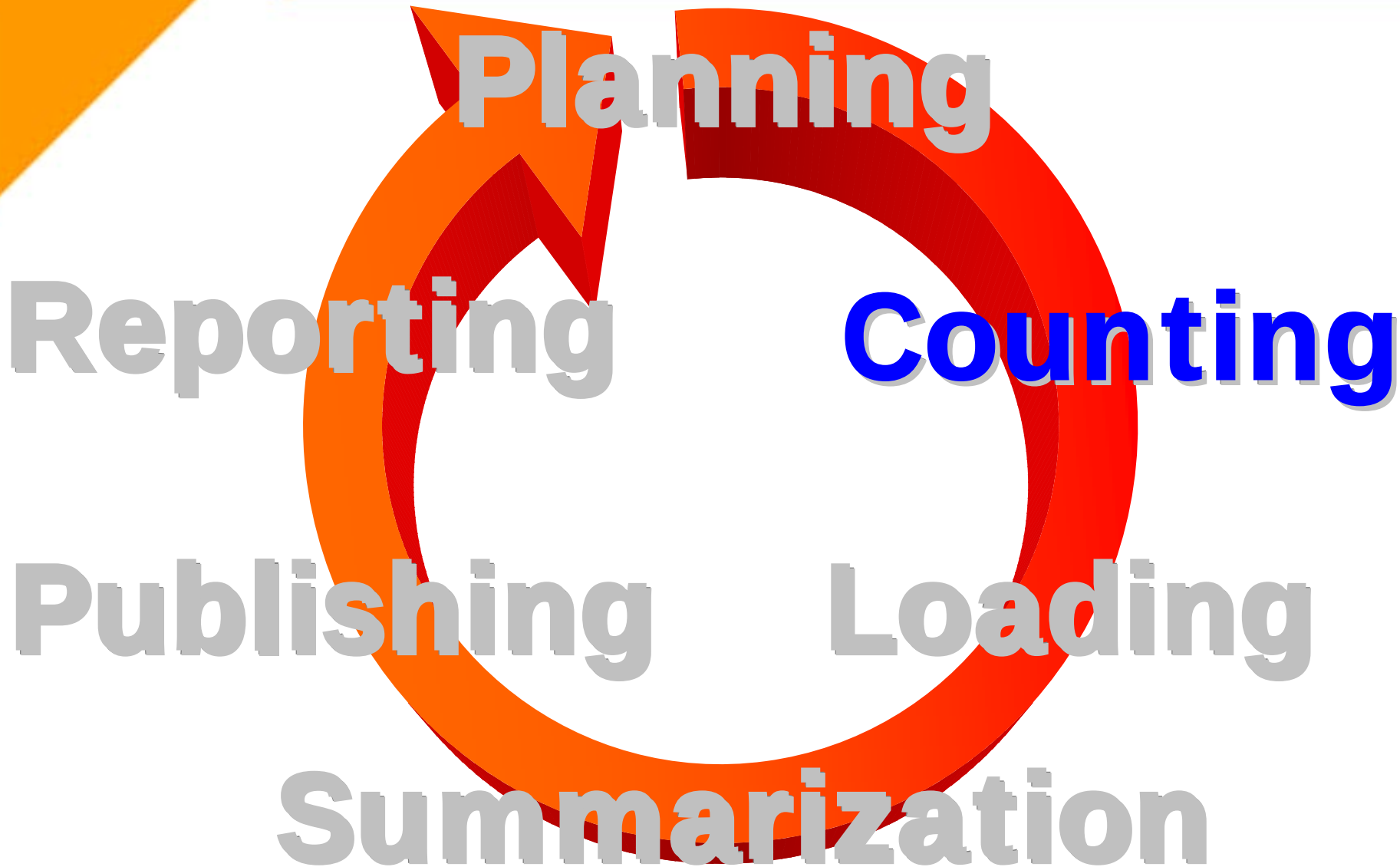
And many others …

Edit TRADAS in Highways

- Count sites edited in Highways
- Changes audited and passed to TRADAS
- Example of enterprise database supporting traffic monitoring


Inventory Items
Inventory
Groupings
Type*
Description
(4)
(5)
TS
TS
TS
TS
TS
TS
CS
CS
CS
L05795
L05795
6326
6326
L05802
0060B
0060C
0060D
Previous Item
Reset Query
Route
Datum
Hierarchy
Unique
Start
End
20-A-B-00016B
.01
.01
Current Row Units:
Kilometers
Count Sites and Traffic Sections are held as Assets on the road network
Powerful Multiple linear referencing capabilities allow the sites and sections to be located easily using the preferred location referencing method
Attributes
Type
Count Site
XSP
Detailed XSP
(1)
(2)
(3)
Count Site No.*
0060B
Pattern Site No.*
6326
Class Site No.*
6326
Dirn.*
N
North
Primary Lanes*
1
No. Of Secondary Lanes
1
Road Name*
CRAPELLA RD
Location Desc.*
WAS 310 0184 E OF H001
Sequence No.*
.01
Flexible attributes allow the user to identify what attributes they want to maintain against each count site and traffic section

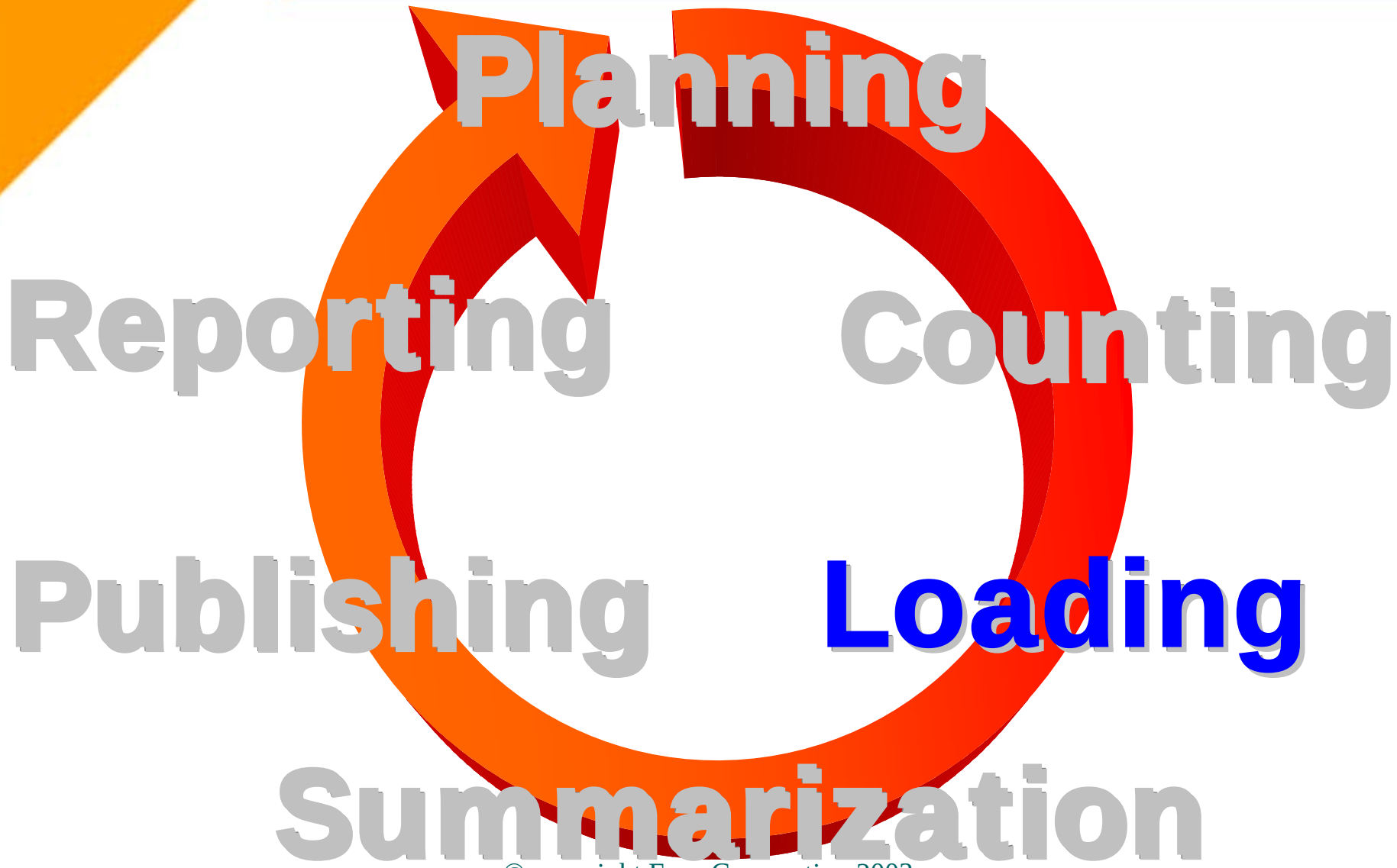
Traffic Data Lifecycle



Traffic Data Sources

- **Permanent sites**
- **Short-term counts**
  - Many devices, few accepted standards
- **Manual counts**
- **No place for enterprise integration**
  - Except
    - Adding ITS data, coming soon

Traffic Data Lifecycle



Data Entry

- **Quality is crucial**
  - Determines usefulness of traffic statistics
- **Controls needed to filter questionable data before aggregating into higher level statistics.**
  - Purging
  - Binding
  - Editing
- **TRADAS has these**
- **No place for integration**

Traffic Data Lifecycle

Count site Summaries

- **Permanent (ATR and ITS) summarized**
  - Daily
  - Monthly
  - Annually
- **Short-term and manual counts summarized**
  - as they are presented to TRADAS
- **TRADAS core function**

Traffic Section Summaries

- **Still calculated by TRADAS**
- **Now on demand from Highways**

Traffic Data Lifecycle

Publish to Enterprise

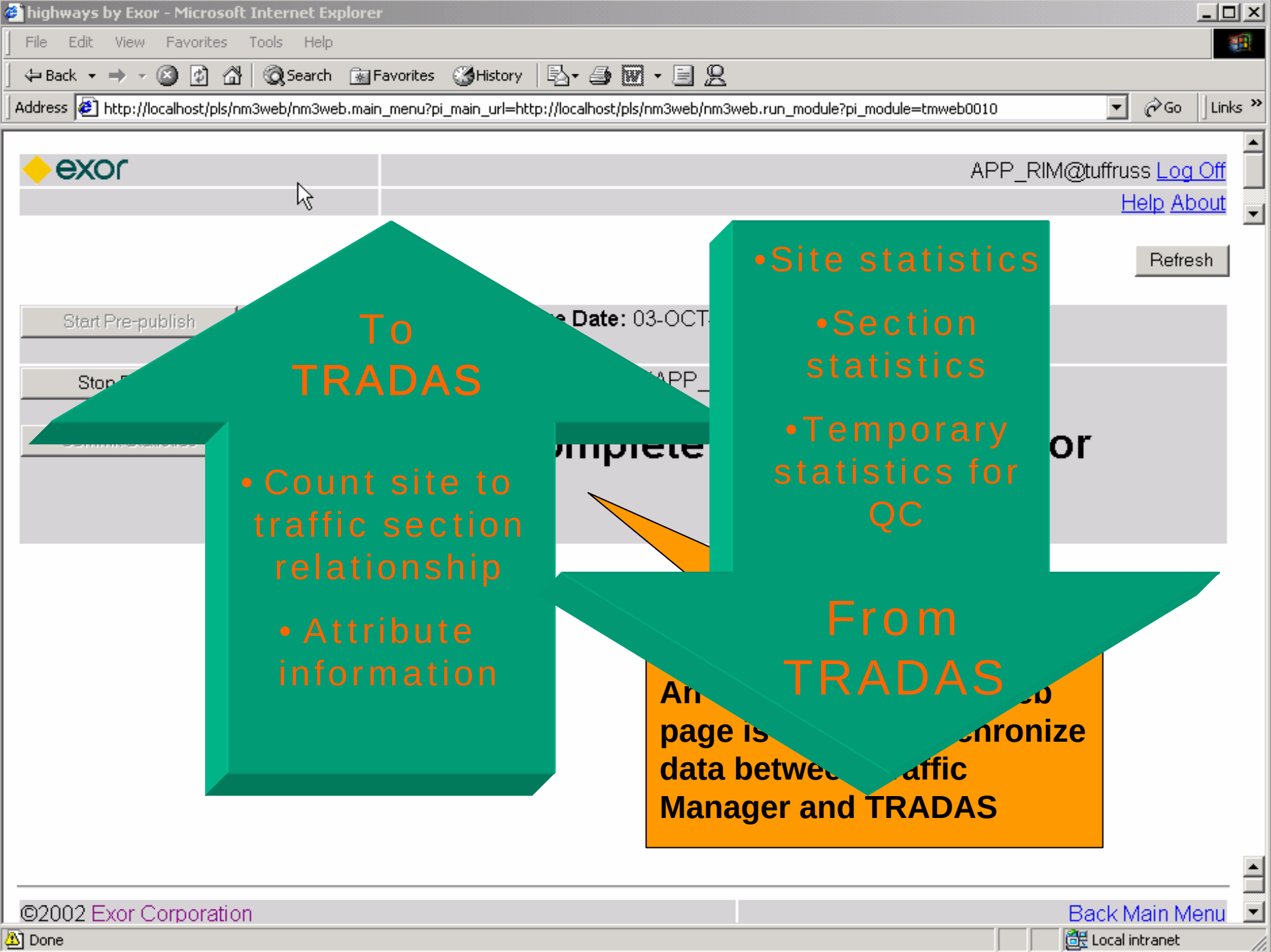
- **Traffic data counted for small subset of the total road system**
- **Need traffic statistics for all road system segments**
  - Planning activities
  - Estimates of vehicle distance traveled
- **Publish statistics to enterprise**
  - Count site statistics
  - Traffic section statistics

Publish Process

- **Synchronize**
- **Calculate traffic section statistics**
- **Publish temporary statistics**
- **Commit statistics to database**
  - No editing of statistics in database

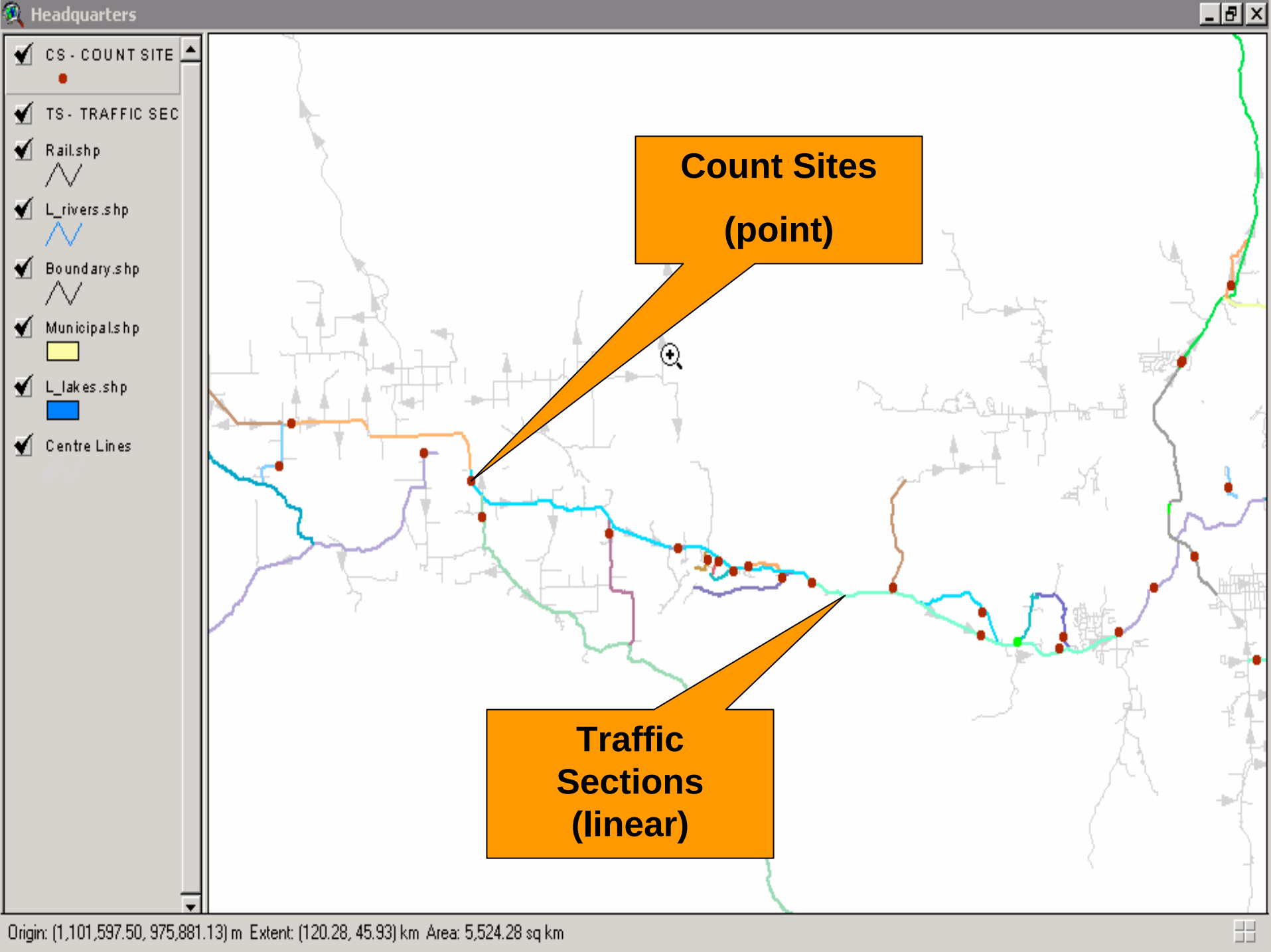
Publishing Statistics Process

- User selects year and network date
- Temporary statistics published first for quality checking
- Data mismatches are logged for quality checking
- Published statistics available to all authorized Highways users

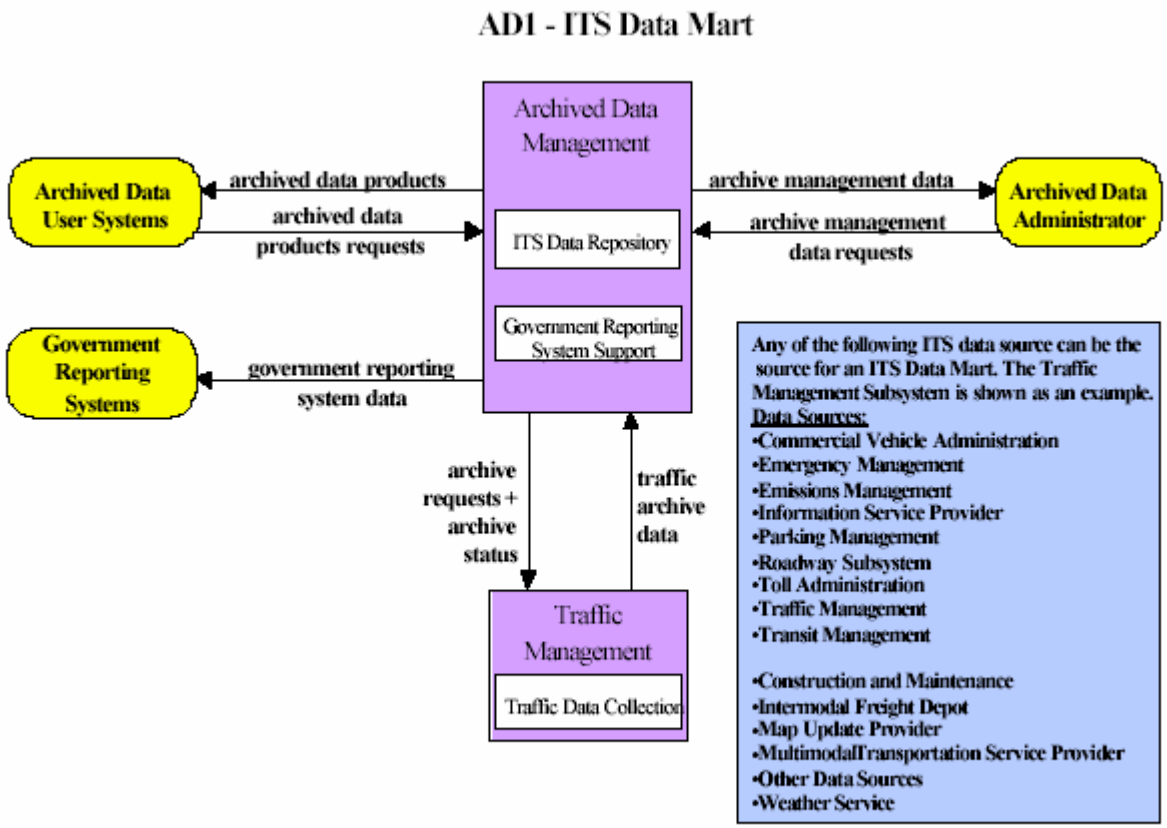

highways by Exor - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Search Favorites History
Address http://localhost/pls/nm3web/nm3web.main_menu?pi_main_url=http://localhost/pls/nm3web/nm3web.run_module?pi_module=tmweb0010
Go Links
exor
APP_RIM@tuffruss Log Off
Help About
Refresh
Start Pre-publish
Date: 03-OCT
To TRADAS
• Count site to traffic section relationship
• Attribute information
•Site statistics
•Section statistics
•Temporary statistics for QC
From TRADAS
page is
data betwe
Manager and TRADAS
©2002 Exor Corporation
Back Main Menu
Done
Local intranet

Traffic Section Statistic Benefits

- **Integration with other enterprise data**
  - High action section crash rates
  - Pavement section deterioration rates
- **Reporting**
  - HPMS
  - VMT
- **GIS**

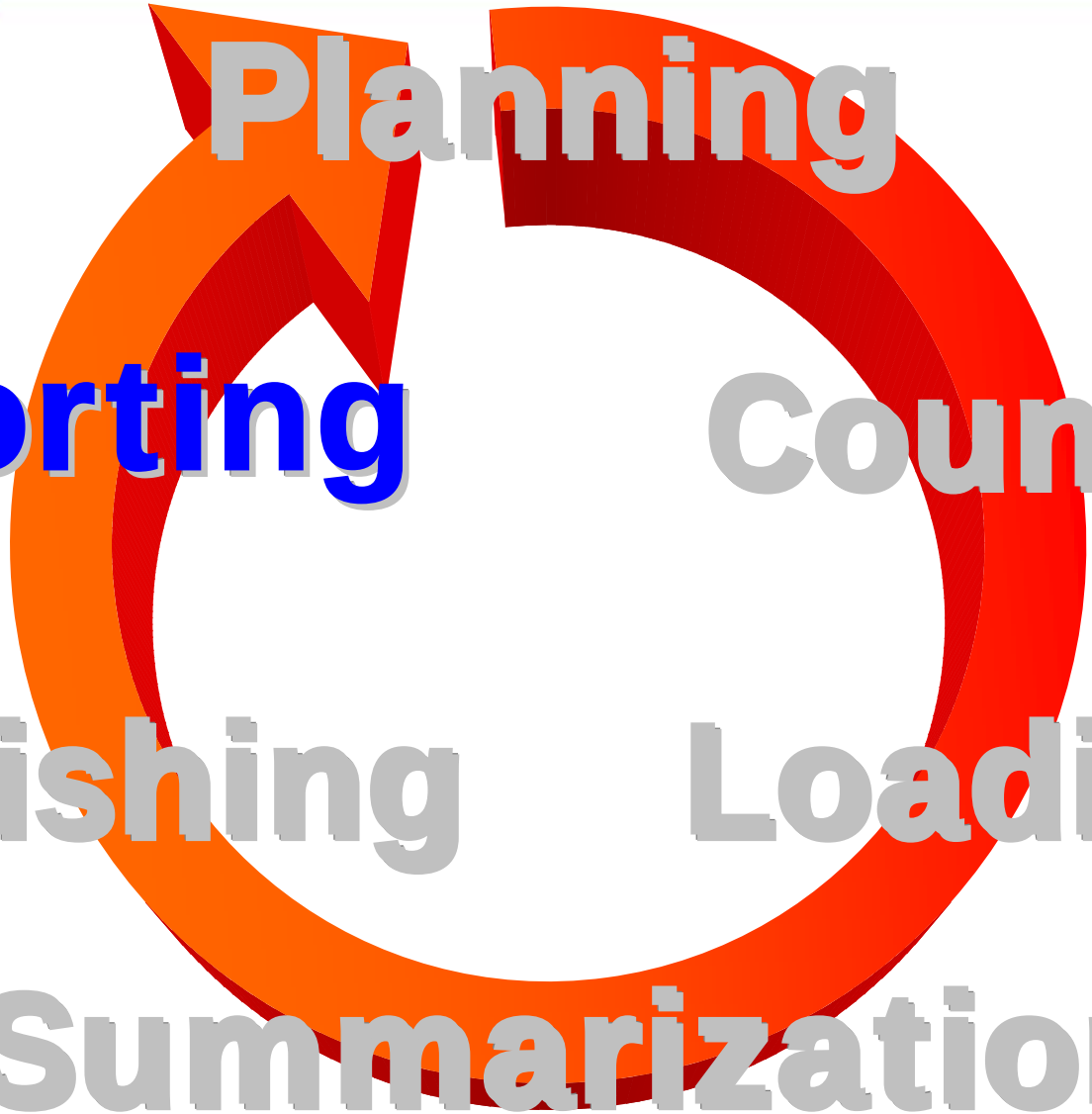

Headquarters
CS - COUNT SITE
TS - TRAFFIC SEC
Rail.shp
L_rivers.shp
Boundary.shp
Municipal.shp
L_lakes.shp
Centre Lines
Count Sites (point)
Traffic Sections (linear)
Origin: (1,101,597.50, 975,881.13) m Extent: (120.28, 45.93) km Area: 5,524.28 sq km

ITS ADUS Data Mart



- **Traffic Data Source and Destination**
  - Issues of quality and definition

Traffic Data Lifecycle



Standard and Ad Hoc Reports

- **Standard reports remain**
  - In-house and federal
    - FHWA OHPI
    - Long-Term Pavement Performance
    - HPMS
- **Now add traffic data to other reports**
- **Standard map views**
- **Ad hoc query capability**
  - Use as filter
- **Report via Internet**

Traffic Data Lifecycle

Closing the loop

- **Manage Historic Data**
  - Keep history of network, including Traffic Sections
  - Keep history of count site locations
- **Plan future work**

Thank You

Marc Krätzschmar
(619) 521 2594
mkratzschmar@exorcorp.com

Credit due to Joe Wilkinson of Chaparral Information Systems, makers of TRADAS