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Safety Analyst – The What, Why, and How?

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FDOT Champion:

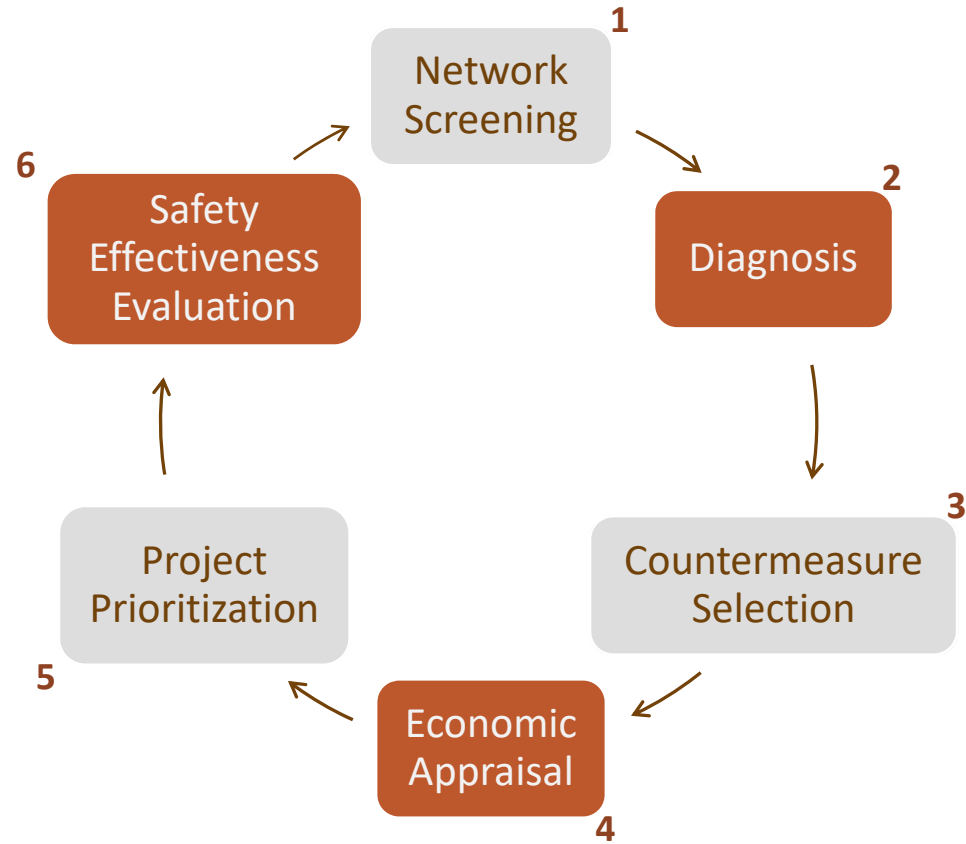
Joe Santos, P.E.



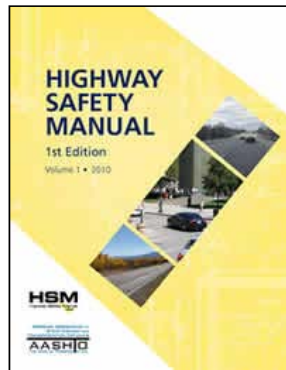
Presentation Overview

- Roadway Safety Management Process
- Safety Analyst
 - What is Safety Analyst?
 - Why use Safety Analyst?
 - What can you do with Safety Analyst?
 - What is the Safety Analyst data model?
 - What are the modules and tools within Safety Analyst?
 - What is FDOT's progress with Safety Analyst deployment?

Roadway Safety Management Process



New Safety Analysis Tools



Provide analytical tools and techniques for quantifying the safety effects of decisions made in planning, design, operations, and maintenance



Provide state-of-the-art analytical tools for use in the decision-making process to identify and manage a systemwide program of site-specific improvements to enhance highway safety by cost-effective means

Safety Analyst

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Tools for Safety Management

To assist agencies in making better decisions about:

- Where to make highway safety improvements?
- What improvements to make?
- How effective the implemented safety improvements are?

Why Use Safety Analyst?

- Safety Analyst can proactively determine which sites have the highest potential for safety improvement
- Safety Analyst integrates all parts of the roadway safety management process into a single software package
- Safety Analyst automates state-of-the-art statistical approaches as described in Part B of the HSM

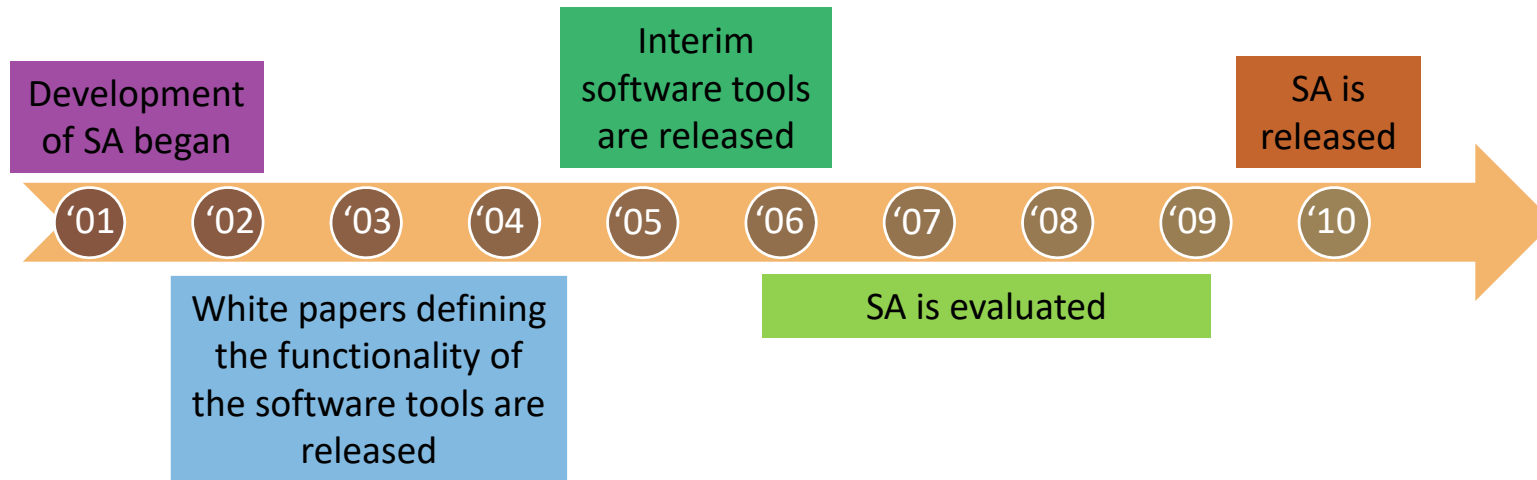
What Can You Do With Safety Analyst?

- Identify locations with greatest potential for safety improvement
- Perform site-specific diagnosis to identify crash contributing factors and crash patterns
- Select countermeasure(s)
- Conduct economic appraisal and prioritize safety improvement projects
- Evaluate countermeasures

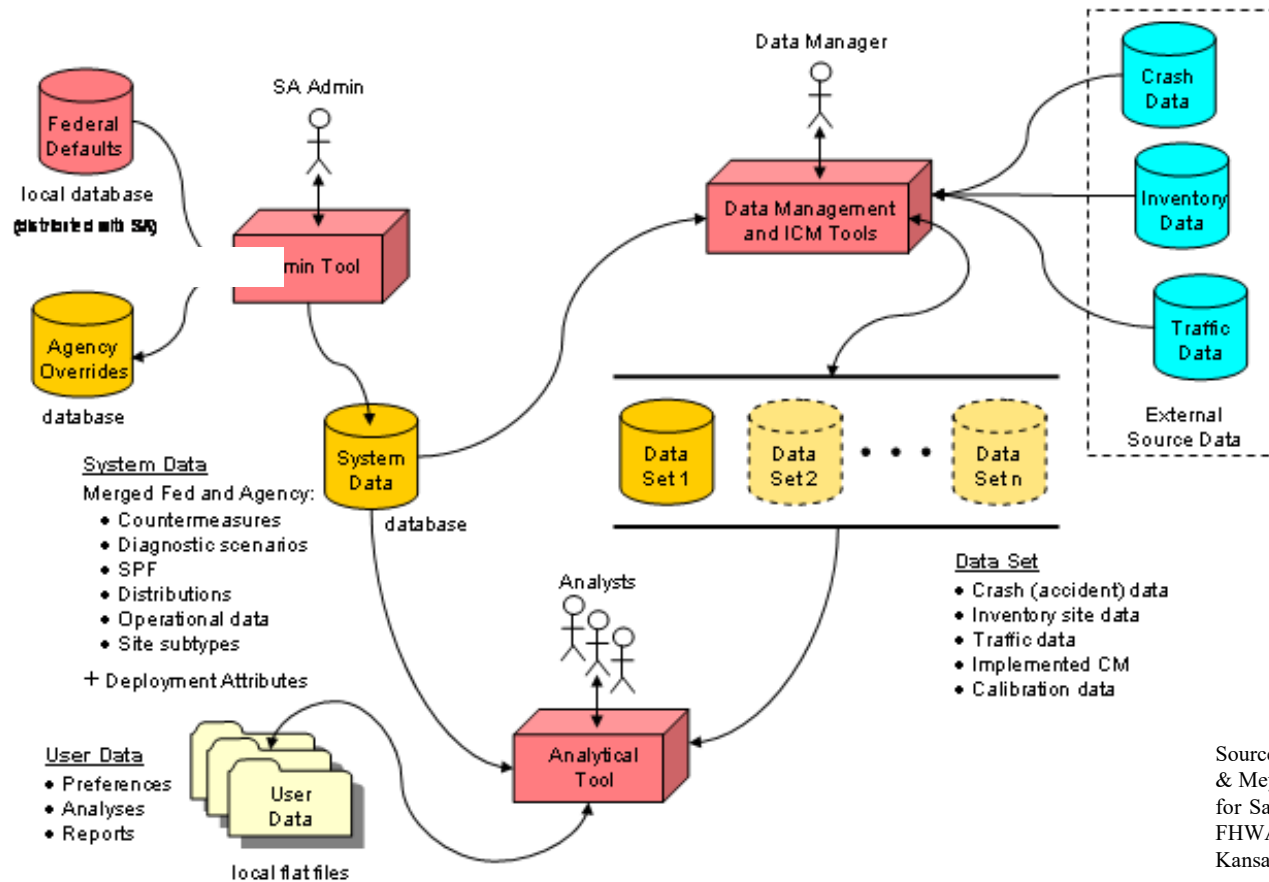
Safety Analyst Capabilities

- Automates all the steps in the roadway safety management process
- Automatically divides the entire road network into predefined site subtypes
- Performs quality control and identifies problems with the data sets
- Applies empirical Bayes (EB) method and ranks problematic sites based on their potential for safety improvement
- Provides expert system to diagnose site conditions and collision patterns and suggest potential countermeasures

Safety Analyst Development Timeline

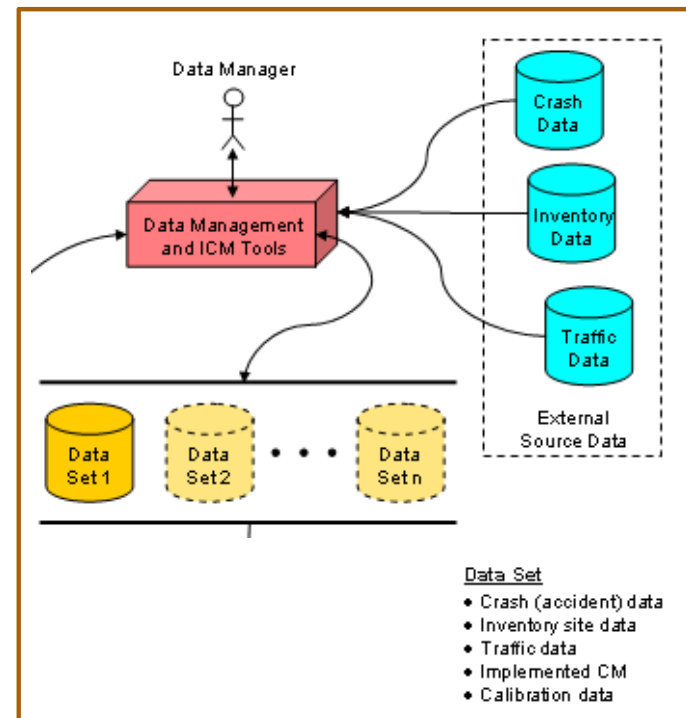
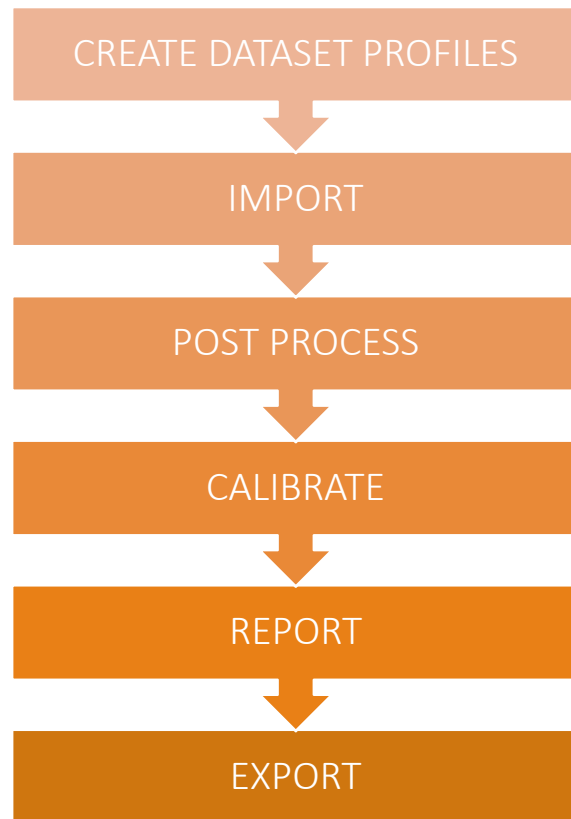


Safety Analyst Data Model

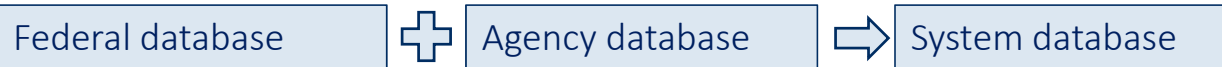


Source: Harwood, D. W., Torbic, D. J., Richard, K. R., & Meyer, M. M. (2010). "SafetyAnalyst: Software Tools for Safety Management of Specific Highway Sites (No. FHWA-HRT-10-063). Midwest Research Institute, Kansas City, MO.

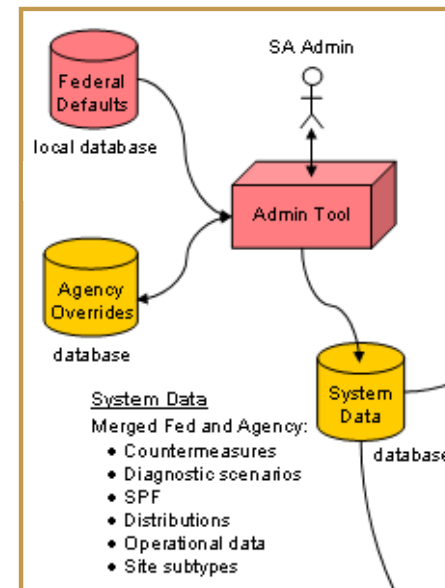
Safety Analyst Data Management Tool



Safety Analyst Administration Tool

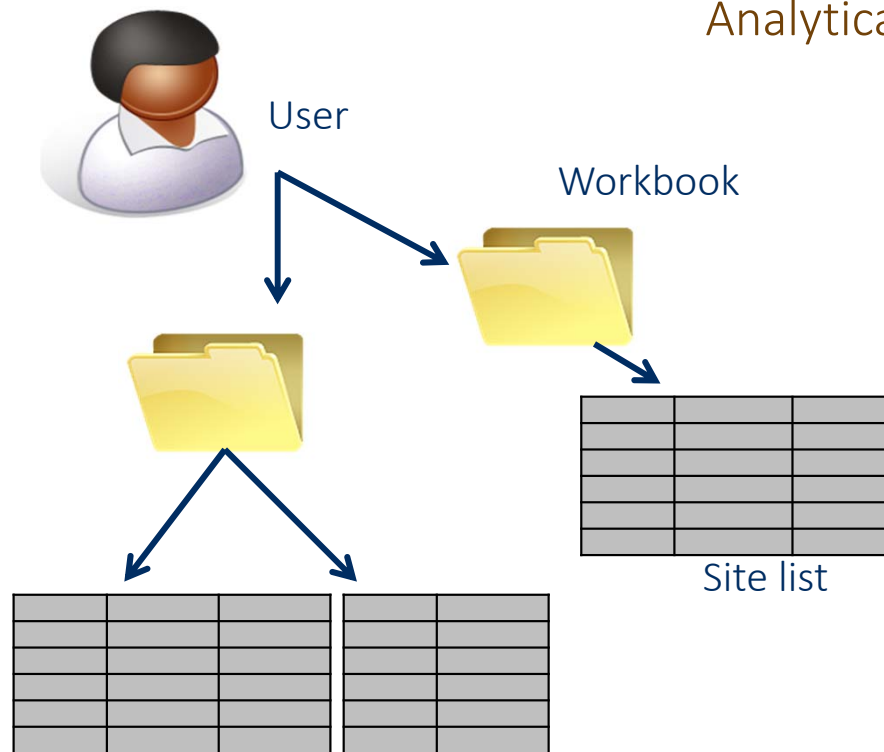


- Edit data attributes
- Edit agency site subtypes
- Edit agency specified user preferences
- Edit agency countermeasures
- Edit agency diagnostics data
- Edit agency specified distribution data
- Edit agency specified SPF data
- Edit cost-related default parameters
- Edit agency organization information
- Edit user-defined administrative preferences
- Submit a software related problem

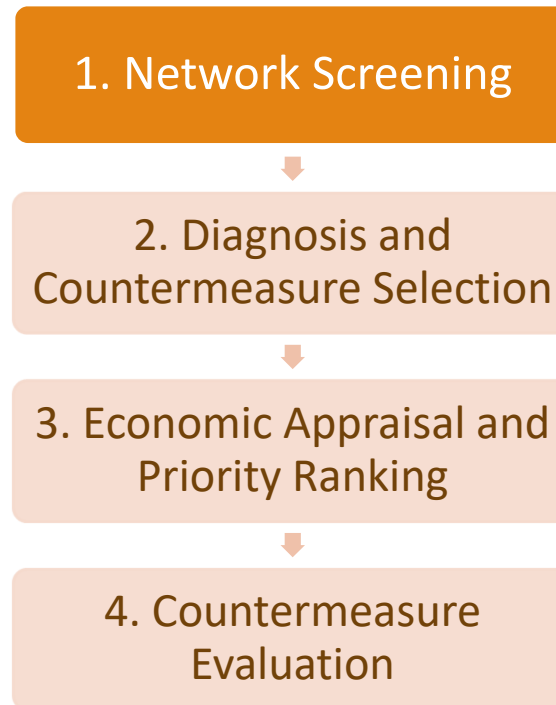


Safety Analyst Analytical Tool

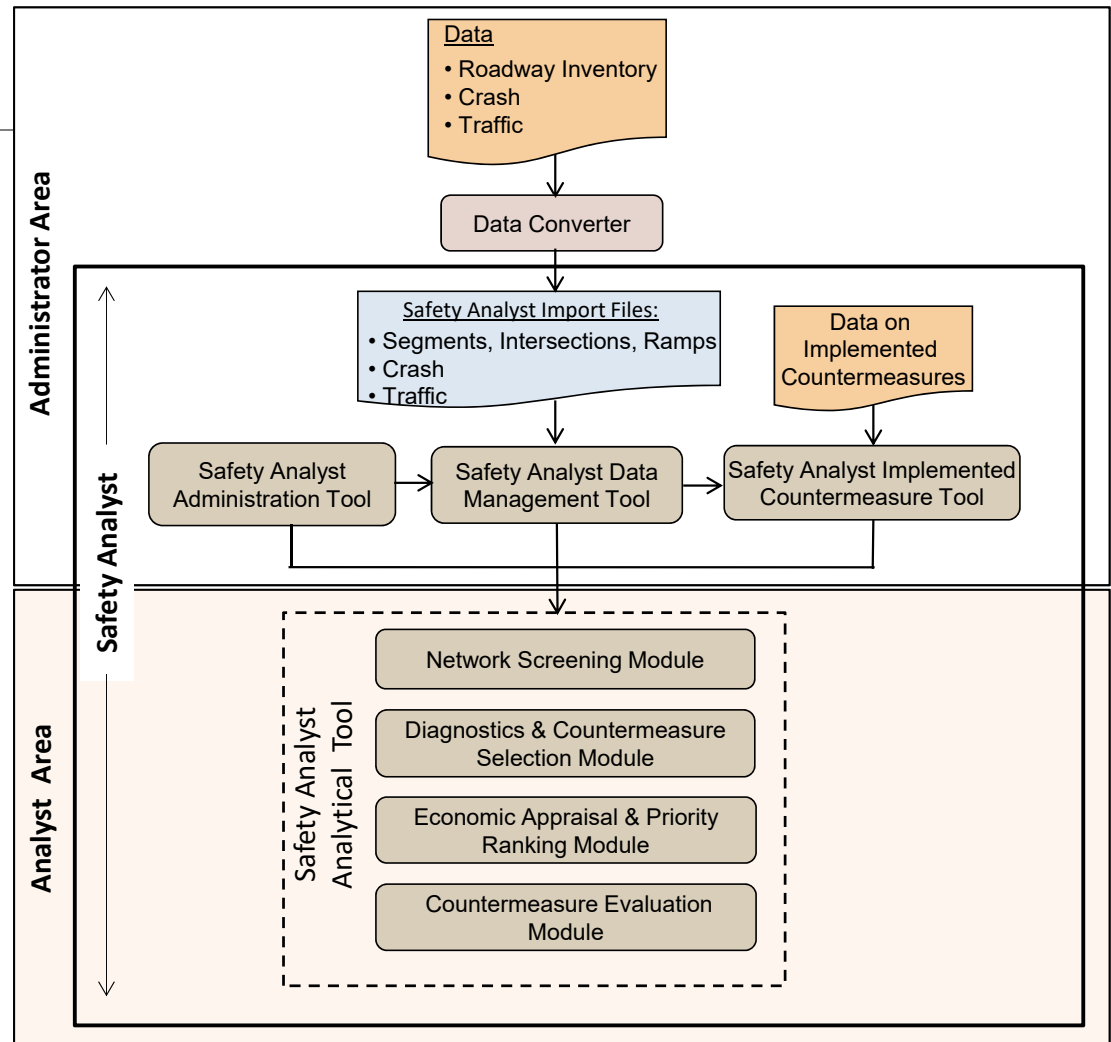
Analytical Tool Framework



Safety Analyst Modules



Safety Analyst Application Process



FDOT's Progress with Safety Analyst Deployment

- **Concern:** Safety Analyst has stringent data requirements
Solution: A conversion program has been developed to automatically generate Safety Analyst import files. However, the program needs to be updated to include data from non-state roads.
- **Concern:** Safety Analyst requires Florida-specific SPFs
Solution: Florida-specific SPFs have been developed to use with Safety Analyst.
- **Concern:** Safety Analyst has steep learning curve
Solution: We will provide technical support and expert advice on Safety Analyst.

Summary

- Roadway safety management is a data-intensive, statistically complex, and computationally rigorous process.
- Safety Analyst automates all the steps in roadway safety management process.
- Safety Analyst requires minimum statistical expertise.
- Data requirements are intense. However, it is a one-time process.
- Safety Analyst can play an important role so that highway agencies get the greatest possible safety benefit from each safety dollar spent.
- Safety Analyst can be used to create safety assessment reports based on rigorous data analysis to secure safety funds and justify their use.

Thank You!

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