MEETING SUMMARY

Meeting Date:	February 11, 2016 (Thursday)	**Time**: 10:00 pm – 12:00 pm
Subject:	FDOT D 5 TSM&O Consortium Meeting	
Meeting Location:	FDOT District 5 Offices, Orlando Lake Apopka B Conference Room	

I. ATTENDEES:

See Attached Sign-In Sheets

II. INTRODUCTION/OVERVIEW

The meeting began with an overview presentation by the Department's Project Manager, Heather Garcia. This included a regional overview of the meeting topics. The presentation then transitioned in to focus sessions for each topic.

III. FITSEVAL Status Update

Starting with Jason Learned defining the Florida ITS Evaluation Tool (FITSEVAL). The tool is being studied and started creating an implementation plan. Currently, at the phase of refining the tool based on feedback. The tool is for high level decision making to determine the feasibility of applying ITS strategies. The tool was created by FDOT in conjunction with the Florida International University. Feedback from the district will help refine the tool.

ITS technologies are becoming more frequent, effective, accessible, and regionally integrated. Currently, the FITSEVAL project is in Phase 2, the Refinement phase, which is based on the agency input during Phase 1 and National research. The goal is to allow the tool to be refined and not static.

The process of the FITSEVAL project consists of four steps which are coding, running model, post-process model, and review of benefit/cost output. Scenarios could be applied in FITSEVAL utilizing relative knowledge of how to implement them in the process. As shown in the FITSEVAL example slide, data such as benefit summary of time savings, and changes in fuel consumption could be utilized in the process to determine the benefit cost ratio.

Next steps for Phase 2, refining FITSEVAL. One step is providing a hands-on sessions to allow individuals to utilize the tool.

Questions and Answers:

Q1: The data (feed) used is static or continuous type?
A1: The data is from 2005, it is static where you don't have newer scenarios.

Q2: As technology grows, are the new integrated data being input in the tool? The data will soon become outdated.

A2: For example, the socio-economic data is not updated frequently. Some parts of the model could be improved or updated but not all. The model provides a needs plan and a cost-feasible plan. The objective is looking at specific future year (long horizon term) and determine the applications and tools that the project could support utilizing an aggregate type of data.

Q3: How about the data of driving license renewals could change quickly, especially for those who stay for a limited time in Florida. The worry is for drivers not the people without driver license or the ability to use transportation facilities
A3: Unrealistic data input will result in unrealistic output from the FITSEVAL model.

Q4: The plans for FITSEVAL strategies, do they align with the LRTP plans? Is it going to be tied to future years? Is the benefit cost of each strategy shown individually or the benefit cost summary will be shown for the strategies altogether?
A4: For example, the macro model doesn't capture signal changes as far as travel time. The model is based on a base year. The district is currently implementing strategies that might benefit the ITS FITSEVAL strategies.

IV. Performance Measures:

Recap. The CMM has 6 dimensions. The dimensions are equally important and they allow monitoring the operation of the system and provide strategies for improvements. Data is available. A database has to be established before determining how to use the data for implementing strategies. Four modes of transportation. Performance measures objectives, according to a methodology used for Smart Cities grant application, are mobility, efficiency, safety, climate change, and sustainability. Mobility is about how to make the traffic flow easy, not to be mixed with efficiency. Considerations must be relatable to the public, approachable by the agency, and they should be measurable.

Questions and Answers:

Q1: Is this an evolution of performance dashboard/MAP-21?
A1: There are different horizons and approaches of implementing the strategies that are based on performance measures.

V. TSM&O – Product Update

Regarding the planning side of the project, we are looking at different perspectives of measures such as travel time reliability and determine how to improve it. From the operations side of view, we are focusing on the data quality. For implementation, data collection is essential. Collecting and connecting data from smart sensors, agency data sets, and third party data. Knowing that there is congestion somewhere needs to be delivered to appropriate individuals, which would help in decision making.

Data fusion is about making sure data is scaled and connected appropriately. Data warehouse is used to store data so that we are able to interpolate data and information. Business intelligent tool, using data from warehouse to create useful information.

Planning – How we are going to do it? Collecting Trends is about conducting benefit cost analysis and system reporting. We need to determine if this investment brings good return, cost benefit analysis.

Planning – Where are we doing it? Data collection: AAM Phase I, II, III, and TMC. A benefit cost analysis is conducted for AAM project which shows that using specialized companies to collect data and do the field work is cost efficient and effective.

Data quality and Data fusion (big data project). How do we use the data is more important than how much data we have in the data warehouse.
Design of the Fusion Center. We are working on creating a central hub to make data sharing and fusion efficient.

Dash boarding. Using tools that exists (i.e. District 4 Freeway Management Dashboard), refine and then use them.

Project Status Update: FDOT Office Upgrades is currently being updated to allow big projects to run normally.

Questions and Answers:

Q1: An issue we had is the data we buy from third party providers being not usable.
A1: There are other third party data providers that are more cost effective, which we are looking for now.

Q2: The data that changes quickly, can we fix the data as quickly as needed?
A2: The decision support tool will make suggestions to solve and fix data as efficiently as possible. With the decision support, there will be improvements of data handling to produce meaningful data decision making system.

Q3: What technologies are you using for the data collection?
A3: Automated tools and sensors are being used to collect the data. A list of data collection tools is available.

Q4: Vendors. Are they going to provide the procedures and the protocol needed to operate the tools we buy from them?
A4: Companies like IBM would send a tool/box without someone to operate it. Some providers are cooperative in that matter.

Q5: Data is available in the district agencies, but is there anyone to input them and convert them to useful information as private companies and news channels do?
A5: We need to provide a case study first and prioritize the work needed to reach that goal.

Q6: How shoulder running will be applied?

A6: Conceptual ideas so far. Otherwise, common standards will be utilized.

TSM&O Consortium Meeting
February 11, 2016

NAME	E-MAIL ADDRESS
Jessica Renfrow	Jessica.renfrow@metriceng.com
Jason Learned	Jason.learned@dot.state.fl.us
Mohamed Aguib	maguib@vhb.com
Jim Gugliotti	jgug@osceola.org
Jim Globis	jglobis@lakecountyfl.gov
Dova Jamison	djamison@golynx.com
Corrina Gumm	corrina.gumm@brevardcounty.us
Scott Arnold	sarnold@melbourneflorida.org
Matt Wilson	MJW@[illegible]mobility.com
VASU PERSAUD	VPP@LCE-FL.com
Charlotte Davidson	CND@LCE-FL.com
Bob Keather	rkeather@ctpo.org
Eric Gordin	eric.gordin@dot.state.fl.us
CRISTINA TORRES REYES	Creyes@itsmymaitland.com

TSM&O Consortium Meeting
February 11, 2016

NAME	E-MAIL ADDRESS
Tony Chau	tchau@ocalafl.org
Pat Clifton	pclifton@ocalafl.org
Jeddel Zaballeros	jzab@osceola.org
Hazem El-Assar	hazem.el-assar@ocfl.net
Pamela Richmond	[redacted] prichmond@lakesumtermpo.com
Stanley Taylor	Stanley.Taylor@marioncountyfl.org
Bryan Honayouni	bryan.honayouni@CFXway.com
Jim Stroz	jim.stroze dot.state.fl.us
Tushar Patel	Tushar.Patel@dot.State.fl.us.
Charlie Wetzel	cwetzel@seminolecountyfl.gov
Jorge A. Barrios	jbarrios@kittelson.com
Noel Oteyza	Noteyza@seminolecountyfl.gov
Dave Muniz	dmuniz@seminolecountyfl.gov.
Brandon Collins	Brandon.Collins@Brevard County.us
Eric Hill	EHill@metroplanorlando.com

Joe Bitar — Joe.Bitar@dot.state.FL.US

Jim Miller — JAMES.MILLER@DOT.STATE.FL.US

Welcome to the TSM&O Consortium Meeting

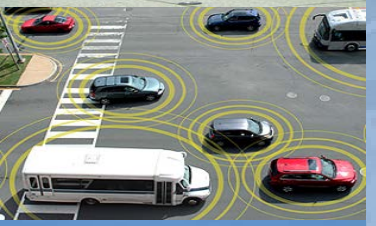
February 11, 2016

FDOT

Transportation Systems Management & Operations

Meeting Agenda

1. FITSEVAL Overview
   - **Jason Learned**, FDOT D5 Planning
2. CMF Performance Measures
   - **Melissa Gross, VHB & Jeremy Dilmore, FDOT**
3. ITS Project Update
   - **Jeremy Dilmore**, FDOT D5 ITS




FLORIDA ITS EVALUATION (FITSEVAL) TOOL

Status Update Presentation

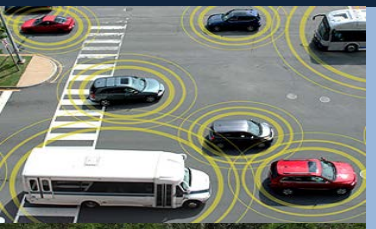
Conducted on behalf of FDOT District 5

And in association with FDOT Central Office

FDOT District 5 TSM&O Consortium

February 2016

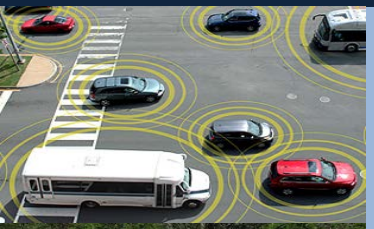
Overview



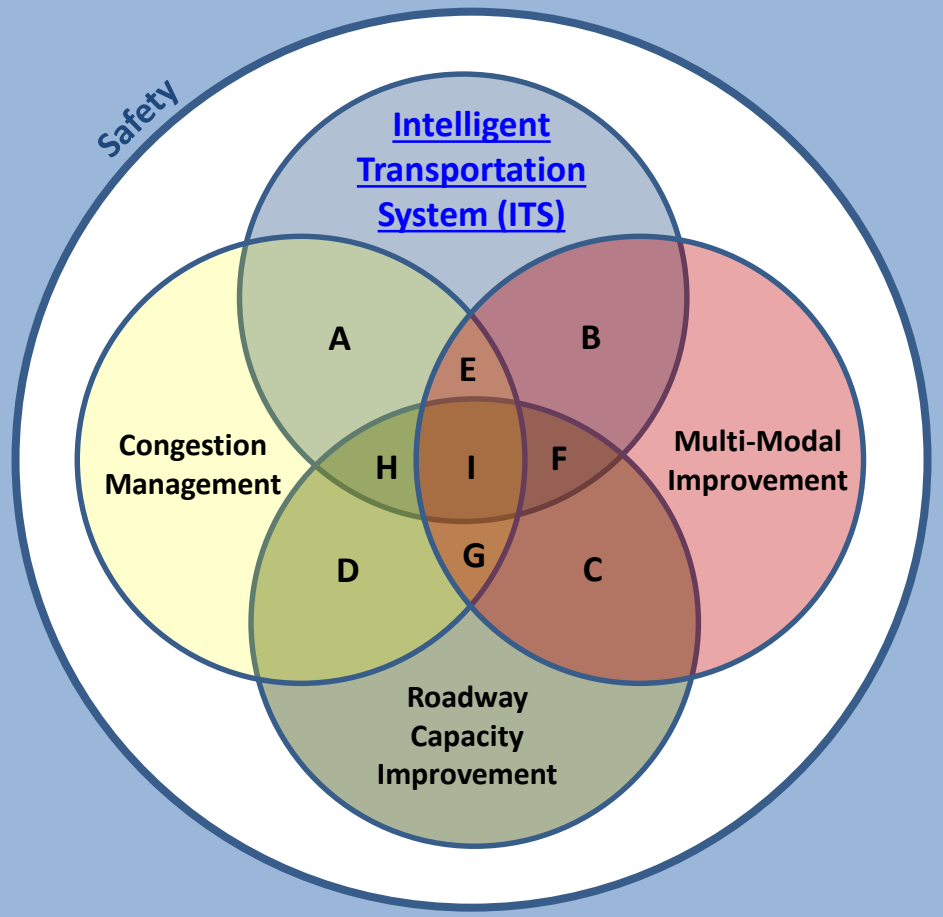
- **Florida ITS Evaluation (FITSEVAL) Tool**
  - Sketch-planning/decision making tool
  - Forecasted volumes from FSUTMS models
  - Evaluates the Benefits/Costs of ITS strategies
- **Applications**
  - Budgeting/Decision making
  - ITS Master Plans
  - Alternatives selection

- **FDOT District 5 & FDOT Central Office**
- **STRRA Legislation = Statewide deployment**

Current Situation



- Limited Capacity => Integrated Strategies
- ITS increasingly important



A - Adaptive Controllers

B - Transit Info Systems

C - Bus Bays

D - Lane Addition

E - Transit Preemption

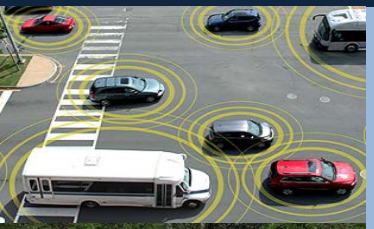
F - Bus Rapid Transit

G - Dedicated Bus Lanes

H - Managed Lanes

I - HOV Lanes

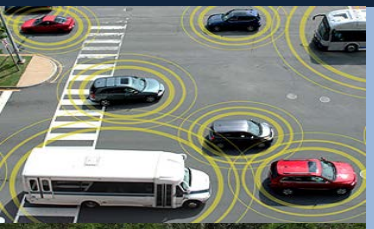
Current ITS Planning



- **ITS Master Plans**
  - MPOs overarching plan for ITS
  - Future traffic volumes not typically considered
- ITS technologies are becoming more
  - Frequent
  - Effective
  - Accessible
  - Regionally Integrated

- Need for holistic long range plans more critical
- Quantitative tools needed to analyze ITS deployments

FITSEVAL Project



- **Phase 1 - Pilot Project**
  - Establish FITSEVAL for use in District 5 and the CFRPM v6 Model
  - Stakeholder coordination
- **Phase 2 - Refinement**
  - Refine FITSEVAL based on Agency input obtained during Phase 1 and National research
- **Project Goals**
  - Consistent, Predictable and Reliable results
  - User friendly sketch planning tool
  - Widespread application
  - Longevity of use
- **We value your input!!**

What does FITSEVAL do?

- ITS deployments evaluated

Advanced Traveler Information (ATI) Road Weather Information (RWI) Advanced Public Transit (APT)	Informational
Signal Timing Improving (STI) Bus Priority (BP) Emergency Vehicle Preemption (EVP)	Signal Improvements
Ramp Metering (RM) Managed Lanes (ML) Incident Management (IM) Smart Work Zone (SWZ)	Management

What does FITSEVAL Provide?

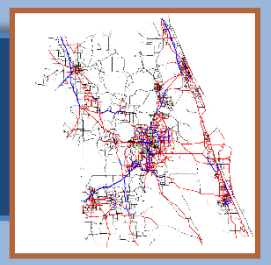
- Measures of Effectiveness (MOEs)

FITSEVAL

- Delay
- Travel Time
- Safety
  - *Fatality*
  - *Injury*
  - *Property Damage Only*
- Fuel Consumption (gallons)
- Emission (gm)
  - *Hydrocarbon*
  - *Carbon Monoxide*
  - *Oxides of Nitrogen*

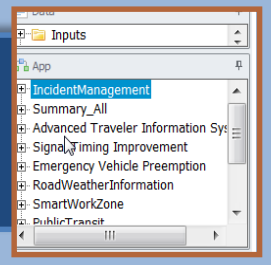
What is the FITSEVAL Process?

Code ITS Deployments in CFRPM v6 Model

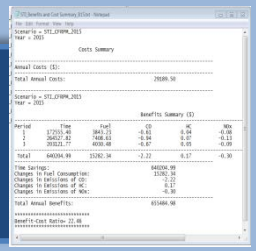


Run Model *CFRPM v6 Model*

Post-Process Model with FITSEVAL



Review Benefit/Cost Output



FITSEVAL Example Results

- **10 Minute Run = Benefit and Cost Summary**

Cost Summaries

BENEFIT SUMMARY

Time Savings	*$493,832.36*
Changes in Fuel Consumption	*$15,560.58*
Changes in Emissions of CO	*-$2.15*
Changes in Emissions of HC	*$0.17*
Changes in Emissions of NOx	*-$0.28*
Total Annual Benefit	**$509,390.68**

COST SUMMARY

Total Annual Cost	$29,189.50

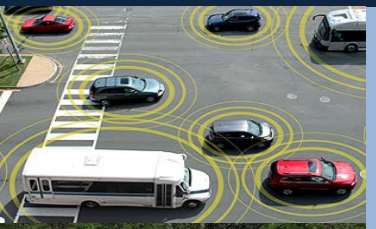
B/C RATIO

Annual Benefit-to-Cost Ratio	*17.45*

Main Cost Savings = Time & Fuel Consumption

*To be refined as part of Phase 2

Phase 2 Next Steps



- **Phase 2 focuses on refining FITSEVAL**
- **This will be achieved through**
  - Scripting and Algorithm adjustments
  - Research into updated data and procedures
  - Making refinements within FITSEVAL model structure
  - Continually thinking “outside-the-box” such as adding other congestion management options
  - Continued coordination with stakeholders
- **Conduct FITSEVAL training work sessions**
- **A successful project is a consensus project**
- **We value your feedback and input**

QUESTIONS

FDOT DISTRICT 5 PROJECT MANAGER
Jason Learned
Jason.learned@dot.state.fl.us

CONSULTANT
Leftwich Consulting Engineers, Inc.

Scot Leftwich, PE, PhD
Scot.Leftwich@Lce-fl.com

Vasu T. Persaud, PE, AICP, PTOE
vtp@Lce-fl.com

Charlotte N. Davidson, PE
cnd@Lce-fl.com

THANK YOU!

Performance Measurements

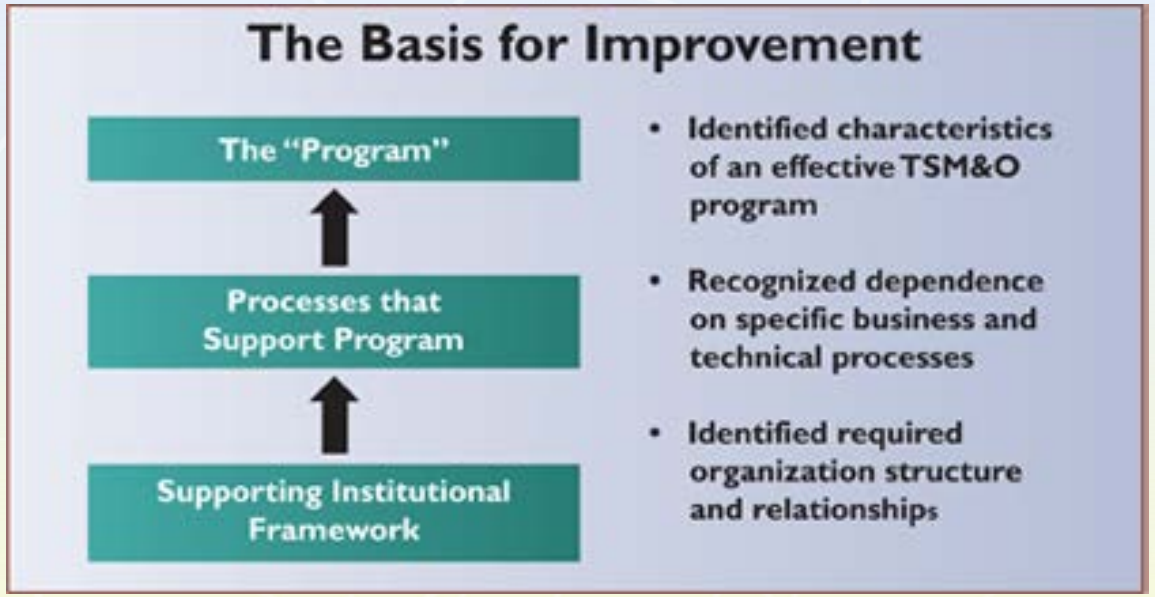
Capability Maturity Framework Dimension

FDOT

Transportation Systems Management & Operations

What is the Capability Maturity Framework (CMF)?

- Framework to implement or improve TSM&O Program
- Consists of Key Dimensions
- Requires a self-evaluation of an agency's current maturity level in each dimension
- Target Capabilities identified
- Task Action Items



FDOT

Transportation Systems Management & Operations

TSM&O

The Six Dimensions

1. **Culture** – technical understanding, leadership, policy commitment, outreach, and program authority;
2. **Business Processes** – formal scoping planning, programming, and budgeting;
3. **Performance Measurement** – measures definition, data acquisition, analysis, and utilization;
4. **Systems and Technology** – systems architecture, standards, interoperability, and standardization and documentation;
5. **Organization and Staffing** – organizational structure, staff capacity, development, and retention; and
6. **Collaboration** - relationships with public safety agencies, local governments, MPO's, and the private sector.

FDOT

Transportation Systems Management & Operations

TS M&O

Why Measure Performance?

- Legislative Mandate
  - MAP-21
  - FAST Act
- Just good practice
- Accountability and transparency
  - Defendable and repeatable process
  - Critical for decision making and funding strategies
  - Identifies strength and weaknesses
- Promotes agency collaboration
  - Data + Analysis + Communication = Credibility

What do Performance Measures do?

- Provide a foundation for evaluation
- Identify our strengths and weaknesses
- Performance measures allows operations to compete in idea marketplace
- Operations has a story to tell, in addition to data intensive programs (e.g., pavement, bridge)
- ..but need a good story for budget justification
  - *… what does the public really care about?*
  - *Can we connect internal to external?*

How do we get started?

- Lots of data to support performance measurement
  - Quality, completeness, and coverage
  - Many data sources for the same measurement (Example: travel time)
  - Collection/acquisition/preparation cost
- Measures
  - Are we measuring the right things?
  - Targets and benchmarks
- Interpretation
  - Understanding the information
  - **Allocation of funding based on performance**

Modes of Transportation to Monitor

- Freight 
- Transit 
- Vehicle 
- Bike and Ped 

FDOT

Transportation Systems Management & Operations

TS M&O

Performance Objectives

Mobility: Improving mobility and connectivity

Efficiency: Provide efficient and reliable movement

Safety: Providing a safe and secure transportation system for all users

Climate Change: Reduce negative impact on climate change

Sustainability: Maintain and Manage assets

Potential Performance Measures - Mobility

Objectives	Goals	Measures
MOBILITY	Provide mode choice and network connectivity	Availability of Real-time Data to Travelers
	Improve mobility for vehicles	Person Throughput
		Delay (Nonrecurring)
		Duration of congestion
		Congested lane miles (%)
	Improve bicycle mobility	Gaps in bike lanes
	Improve pedestrian mobility	Gaps in sidewalks
	Improve Transit Options and Performance	Transit ridership
		Number of busses in Operation
		Number in trains in operation
	Provide Freight Mobility	Availability of Real-time Data to Freight Providers
		Off-hour Freight Deliveries

Potential Performance Measures - Efficiency

Objectives	Goals	Measures
EFFICIENCY	Provide efficient movement of vehicles	VMT/VHT
		Congested Travel Time
		Delay
		Travel Time Index
	Provide reliable transit	Travel time reliability
		Schedule adherence
	Provide Reliable Freight Movement	Freight Delay
		Freight VMT

Potential Performance Measures - Safety

Objectives	Goals	Measures
SAFETY	Provide Effective Incident Management	**Incident Duration**
	Improve safety for pedestrians	**Severity of pedestrian crashes**
		Number of pedestrians injured
	Improve network safety	**Number of crashes**
		Incident Severity
	Leveraging Technology	**Number of crashes in CV areas**
		Incident Severity in CV Areas
		RSE alerts issued

Potential Performance Measures – Climate Change

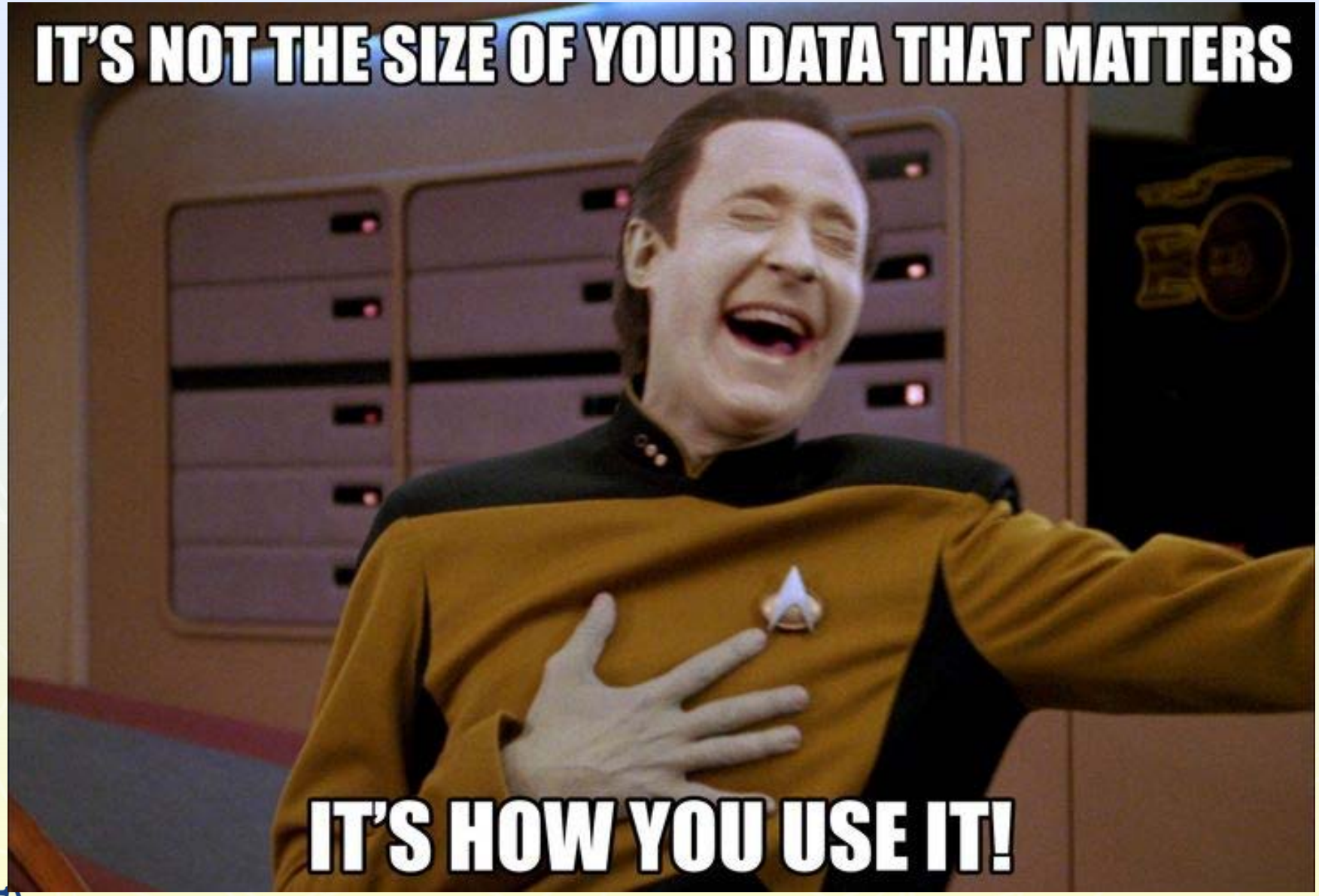
Objectives	Goals	Measures
CLIMATE CHANGE	Reduce negative impact on climate change	Emissions
		Availability of Recharging Stations
		Alternative Fuel Availability for Transit
		Green Land Use and Development Regulation

Performance Measures – Sustainability

Objectives	Goals	Measures
SUSTAINABILITY	Provide Asset Management	**Catalog of existing assets on the network**
	Maintain a state of good repair on all field assets	**Maintenance records for network assets**
		Feedback from Public

Considerations for Performance Measures……..

- Clear link to agency goals
- Relevant to policy-makers and the public
- Intuitive **or** easy to understand
- Communicate core mission of the organization
- Reliable data must be available
- Manageable number of measures
- Must be capable of showing a trend



FDOT

Transportation Systems Management & Operations

TS M&O

Performance Measure

- What does it have to do with me
  - Planning
  - Operations
- How are we going to get it done
  - Operations
  - Planning
  - IT

Planning – What about me

- Desire to move away from LOS
- Other Performance Measures for CMP?
  - Delay
  - Travel Time Predictability
  - Crash Rate
  - Maintenance and Operation Benefit/Cost

Operations – What about me

- Real-time performance measurement
- Decision Support Systems
  - Signal Plan Change
  - Device Status
  - Data Quality
- Leading Metrics for retiming need
  - Permitted work
  - AADT growth

How we going to do it

Collecting Information

- Smart Sensors
- Agency Data Sets
  - Permits
  - Infrastructure Information
  - Maintenance History
- 3rd Party Data

Operations - How we going to do it

- Data Collection
  - Placement of sensor for operations and planning data
- Dashboarding for Decision Support

Info Tech – How we going to do it

- Technical Expertise
- Data Fusion
- Data Warehouse
- Business Intelligent Tool

Planning – How we going to do it

- Data Exploration
- Collecting Trends
  - Benefit Cost Analysis
  - System Reporting
- Determining Investments
- Looking Data Gaps

When is this going to happen

It already is happening!

Transportation Systems Management & Operations

Where are we doing this already

- Data Collection
  - AAM Phase I
    - Deployed
  - AAM Phase II
    - Letting this month
  - AAM Phase III
    - Design to Begin shortly
  - Intersection Turning Movement Counts
    - Received Proposals

Where are we doing this already

- Data Quality
  - ITSIQA
    - Received LOI
- Data Fusion
  - Big Data Project
    - Just executed with UF
    - 5 Use Cases
- Design of the Fusion Center
  - Working with VHB, UF, and EPIC
  - Sunguide/HERE data/will expand

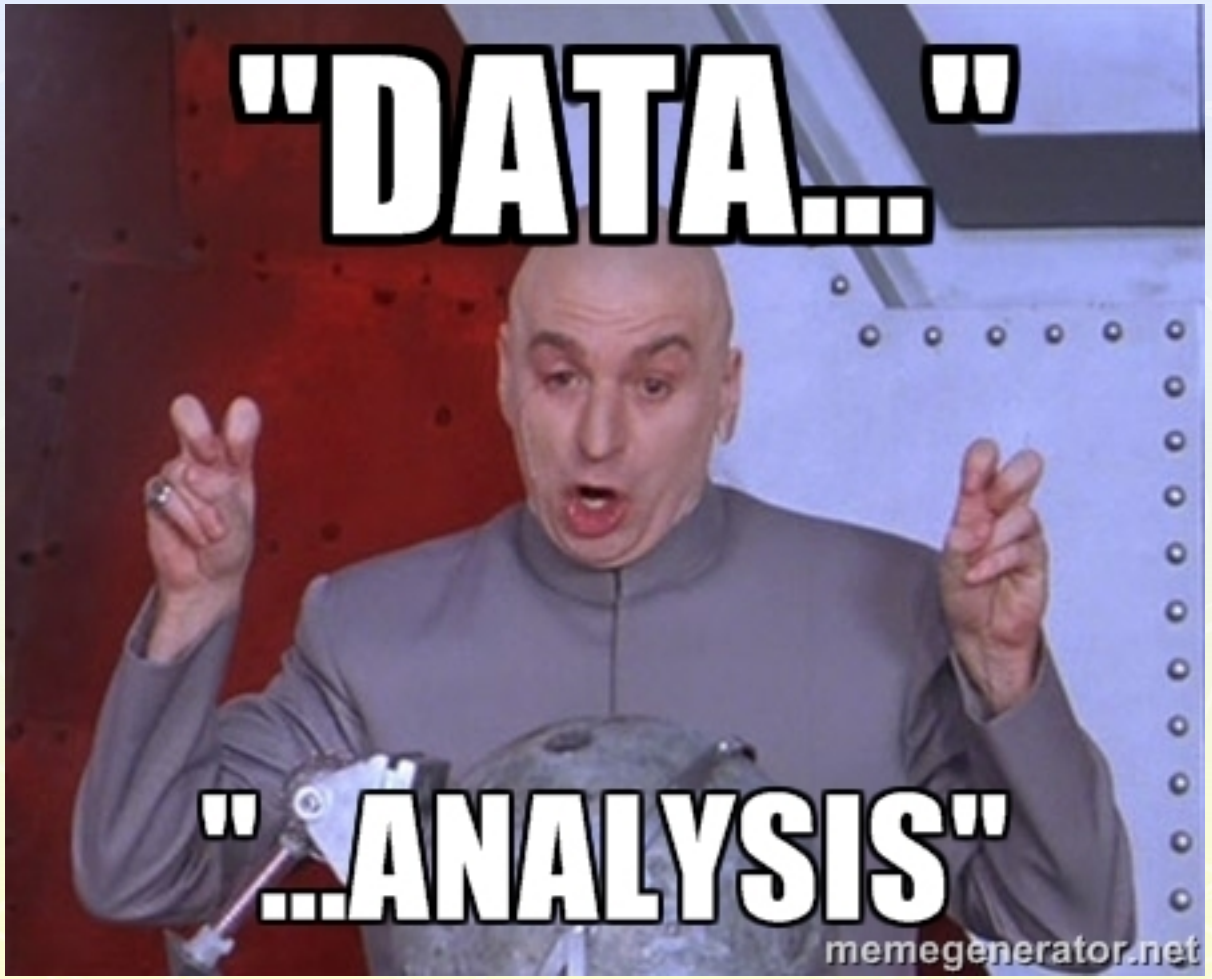
Where are we doing this already

- Dash boarding
  - Active Arterial Management
    - Design Begun
  - Freeway Management Dashboard
    - Designed/Constructed (Thanks D4)
    - To be deployed in TMC
  - TSM&O Performance Dashboard
    - Based on Project Deployments
    - Designed
    - Being Constructed
    - Needs Multimodal Measures Outside TSP

Performance Measurement

- We are going to have the data collection
- We are going to have the data store
- We are going to have the reporting systems
  - Funded Projects
- Need to look at staffing – O&M FUNDING
  - Critical to support planning and operations
  - Potential Role for University

Use your data



FDOT

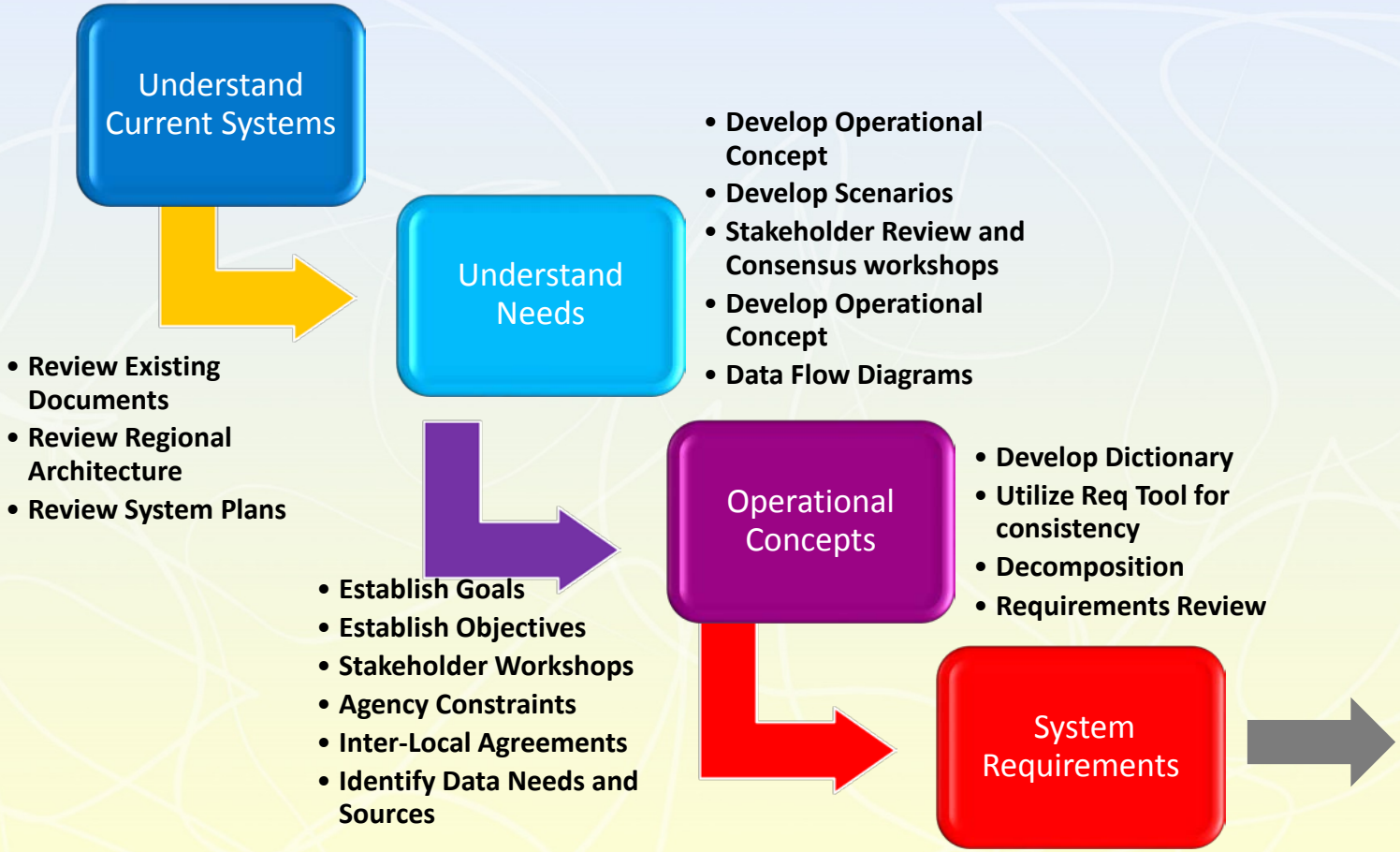
Transportation Systems Management & Operations

TS M&O

Project Status Update

- DSS/ATMS
- TSP
- FDOT Office Upgrades
- Master Plan
- Hard Shoulder Running
- Readdressing (ReIP)

Approach for DSS & ATMS System (Concept Phase) -



Where we are?

- Still in Operational Concept Phase
  - Have developed draft Concept of Operations
  - Held some Workshops
    - Needs and Goals
    - Concept/ Scenario
  - Have developed draft State of the Practice

Summary

- Need to have consensus on alternatives and system concept
- Will have meetings soon to discuss with appropriate stakeholders
- Handout!!

Transit Signal Priority

- Phase 1
  - Finishing Construction
- Phase 2
  - Awarded to Chincor
- Phase 3
  - On hold

FDOT Office Upgrades

- Upgrading Power
  - Design Complete
  - Construction Complete estimated Beginning May
- Processing Power Upgrade
  - Dependent on Power
  - Drives BlueMAC and IVEDDS services

Master Plan

- Working on MOU
- Working on a Resource Sharing Plan
- Working on web interface for collected information
  - Make available for your use

Hard Shoulder Running

- Developed a concept
  - To review with FHWA
- From US 192 to Dirksen
- Assists outbound movements from I-4 Ultimate

Re-IP

- Wait and see mode on new PM
- No work proceeding

Questions?

FDOT

Transportation Systems Management & Operations

TS M&O

TSM&O Consortium Meeting

MEETING AGENDA

D5 Urban Office
133 S. Semoran Blvd.
Orlando, FL
Lake Apopka B Conference Room

February 11, 2016; 10:00 AM-12:00 PM

1) INTRODUCTIONS
   - Heather Garcia, FDOT Planning
2) FITSEVAL STATUS UPDATE
   - Jason Learned, FDOT Planning
3) PERFORMANCE MEASURES
   - Melissa Gross, VHB & Jeremy Dilmore, D5 ITS
4) TSM&O – PROJECT UPDATE
   - Jeremy Dilmore, D5 ITS