

PTV GROUP
the mind of movement

USING INNOVATION SOLUTIONS TO INCREASE SUSTAINABLE MOBILITY AND EVALUATE TRANSPORTATION IMPACTS

Name, Title
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THE FUTURE OF MOBILITY

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PTV VISTRO

VISION TRAFFIX + OPTIMIZATION

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WHAT DOES VISTRO OFFER?

Vistro is an All-in-One Software...

- Intersection Level of Service
 - Variety of Validated Industry Methods
 - "Clear Box"
- Robust Signal Timing Optimization
 - Local Optimization
 - Network Optimization
- Fully Integrated Traffic Impact Analysis
 - Trip Generation
 - Trip Distribution
 - Manual Trip Assignment

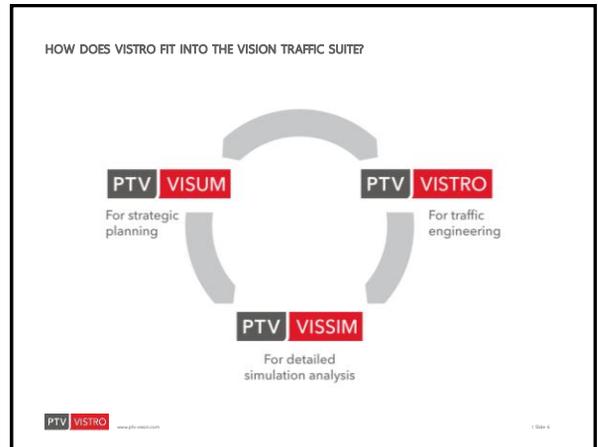
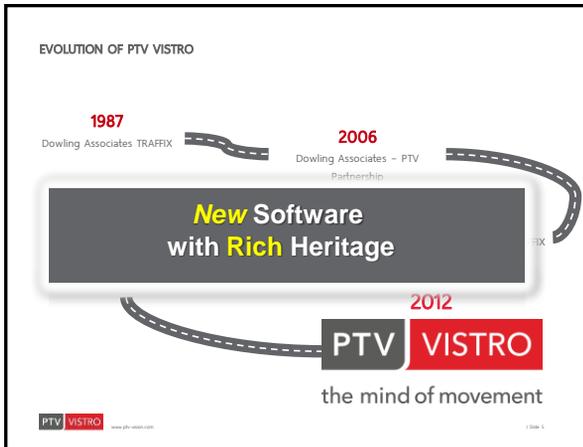
... Plus More!

- True Scenario Management
 - Base Scenario
 - Unlimited additional scenarios
 - All in a single file
- Mitigation Analysis Options
 - Compare Options to Do-Nothing
- Most Comprehensive Reporting
 - On-screen Visual Output
 - Quantitative Tabular Output
 - Automatic Figures

And...

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PTV VISTRO USE CASES 1

- **Conducting Traffic Impact Analyses (TIA):** Evaluate the Impacts of proposed future developments on the transportation network
 - trip generation, distribution, and assignment of development traffic
 - multiple scenario management
 - mitigation testing and evaluation
 - comprehensive, report-ready tables and figures
 - preview future development traffic with the integrated PTV Vissim viewer
- **Developing Transportation Master Plans:** Transportation Master Plans can be quickly developed through
 - efficient data entry and storage
 - integration with PTV Visum for incorporation of long-range forecasting data

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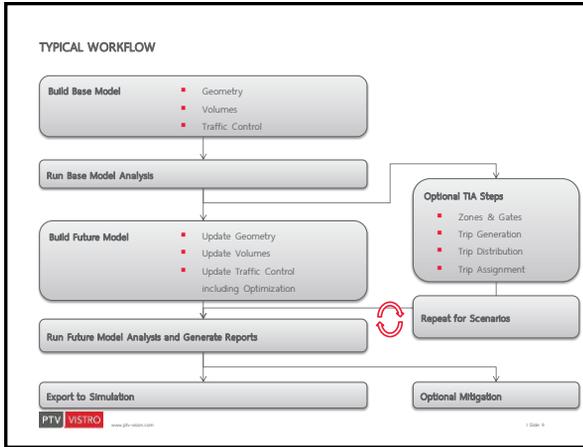
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PTV VISTRO USE CASES 2

- **Conducting Signal Timing and System Evaluations:** PTV Vistro expedites the analysis of signal systems operations and re-timing studies
 - intersection, corridor, and network optimization
 - seamless transition to PTV Vissim for micro simulation
- **Performing Corridor Studies:** Use PTV Vistro for quick and easy analysis of corridors, including
 - re-design of facilities
 - identifying proper traffic control devices
 - evaluating future mitigation needs

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TYPICAL WORKFLOW BUILDING THE MODEL

- Based on Background Images
 - BING
 - Image Files
- Automation: Network Model Import
 - Visum
 - ANM
 - Synchro
- Traffic Counts
 - Copy & Paste

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TYPICAL VISTRO WORKFLOW

- Obtain Data
- Build Base Network Model
 - Geometry
 - Volumes
 - Traffic Control
- Run Base Network Analysis and Generate Output
- Generate Future Model
 - Update Geometry
 - Update Volumes
 - Update Traffic Control
 - Traffic Control Changes
 - Signal Timing Updates, including Optimization
- Run Future Model Analysis and Generate Output
- Repeat for Scenarios
- (Export to Simulation)

Intersection Setup		Intersection: Intersect 1 (Signal at Wilson St)											
		Signal											
		NOV 2015											
		NOV 2015											
Number	1												
Control Type	Signal												
Analysis Method	NOV 2015												
Name	Intersect 1	Intersect 2	Intersect 3	Intersect 4	Intersect 5	Intersect 6	Intersect 7	Intersect 8	Intersect 9	Intersect 10	Intersect 11	Intersect 12	
Block Name													
Approach	Approach1	Approach2	Approach3	Approach4	Approach5	Approach6	Approach7	Approach8	Approach9	Approach10	Approach11	Approach12	
Left Configuration	T	T	T	T	T	T	T	T	T	T	T	T	
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Base Volume (veh/h)	0	300	0	20	300	0	0	170	20	0	0	0	
Total Demand Volume (veh/h)	300	300	20	20	300	0	0	170	20	0	0	0	
Left Flow (veh)	0	0	0	0	0	0	0	0	0	0	0	0	
Thru Flow (veh)	0	0	0	0	0	0	0	0	0	0	0	0	
Right Flow (veh)	0	0	0	0	0	0	0	0	0	0	0	0	
No. of Lanes in Phase	1	1	1	1	1	1	1	1	1	1	1	1	
Phase Length (s)	120	120	120	120	120	120	120	120	120	120	120	120	
Block	D	D	D	D	D	D	D	D	D	D	D	D	
Block Length (ft)	100	100	100	100	100	100	100	100	100	100	100	100	
Block Width (ft)	30	30	30	30	30	30	30	30	30	30	30	30	
Speed (mph)	30	30	30	30	30	30	30	30	30	30	30	30	
Queue (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
Clearance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
Clearance (m)	0	0	0	0	0	0	0	0	0	0	0	0	
Clearance (ft)	0	0	0	0	0	0	0	0	0	0	0	0	
Clearance (m)	0	0	0	0	0	0	0	0	0	0	0	0	
Right Turn-on-Red	R	R	R	R	R	R	R	R	R	R	R	R	

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INTERSECTION ANALYSIS

Four Control Types

Multiple Analysis Methodologies

- HCM 2010
- HCM 2000
- Kimber (Roundabout)
- Critical Movement (Circular 212 / ICU)

A "Clear Box" Concept Software

- Detailed Parameter Sets for Capacity Analysis

Different Methodologies within the Same Network

Signal Warrant Analysis (Volume-Based)

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TRAFFIC IMPACT ANALYSIS (TIA) FUNCTIONALITY

Network Component for TIA

- Zone (Zone), Gate (Gate), Path (Path)

Trip Generation

- Trip Generation Manual or Custom Trip Generation Data (e.g. OTISS Import)
- One-Click Land Use Updates
- Multiple Zones for Redevelopment or Mixed Use Development Cases
- Negative Trip Generation

Volume Adjustment

- In-process / Approved, Diverted, Pass-by, etc.



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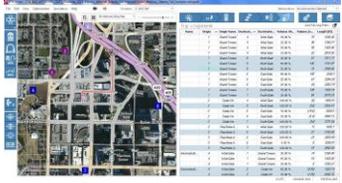
TRAFFIC IMPACT ANALYSIS (TIA) FUNCTIONALITY

Trip Distribution

- Tabular Input To / From Development Zones
- Mirror Trips (From / To Trips)

Trip Assignment

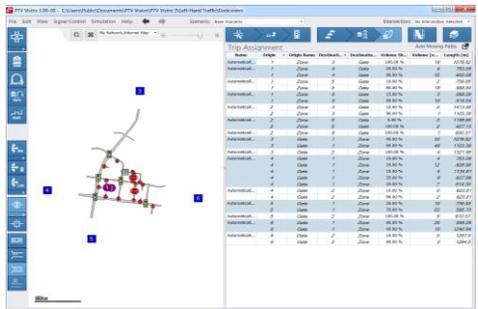
- Shortest Path Search
- Manual Input for Paths
- Visual Display of Paths
- Automatic Error Check




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TYPICAL VISTRO WORKFLOW



Name	Origin	Destination	Volume	Mode	Category	Length (m)	Weight
Intermodal-1	Zone 1	Zone 2	100.00%	P	10750.00	10750.00	10750.00
Intermodal-2	Zone 1	Zone 3	100.00%	P	20000.00	20000.00	20000.00
Intermodal-3	Zone 1	Zone 4	100.00%	P	30000.00	30000.00	30000.00
Intermodal-4	Zone 1	Zone 5	100.00%	P	40000.00	40000.00	40000.00
Intermodal-5	Zone 1	Zone 6	100.00%	P	50000.00	50000.00	50000.00
Intermodal-6	Zone 1	Zone 7	100.00%	P	60000.00	60000.00	60000.00
Intermodal-7	Zone 1	Zone 8	100.00%	P	70000.00	70000.00	70000.00
Intermodal-8	Zone 1	Zone 9	100.00%	P	80000.00	80000.00	80000.00
Intermodal-9	Zone 1	Zone 10	100.00%	P	90000.00	90000.00	90000.00
Intermodal-10	Zone 1	Zone 11	100.00%	P	100000.00	100000.00	100000.00

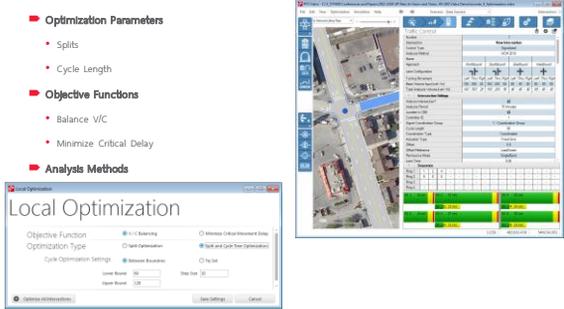


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TYPICAL WORKFLOW LOCAL SIGNAL OPTIMIZATION

- Optimization Parameters
 - Splits
 - Cycle Length
- Objective Functions
 - Balance V/C
 - Minimize Critical Delay
- Analysis Methods

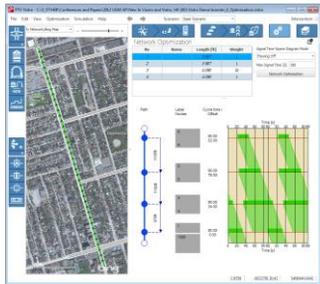



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TYPICAL WORKFLOW NETWORK SIGNAL OPTIMIZATION

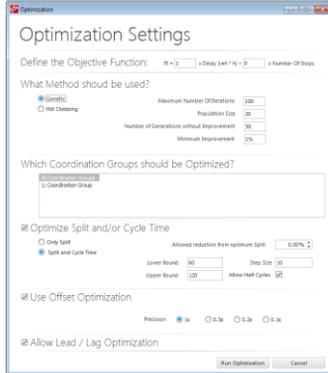
- Optimization Parameters**
 - Offsets, Splits, Cycle Length, Lead/Lagging Left Turns
- Optimization Methods**
 - Hill Climbing
 - Genetic Algorithm
- Objective Functions**
 - Weighted Sum of Delay and Number of Stops
- Platoon dispersion model**
- Corridors**
 - To give weights
 - Time Space Diagram



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TYPICAL WORKFLOW NETWORK SIGNAL OPTIMIZATION

- Optimization Parameters**
 - Offsets, Splits, Cycle Length, Lead/Lagging Left Turns
- Optimization Methods**
 - Hill Climbing
 - Genetic Algorithm
- Objective Functions**
 - Weighted Sum of Delay and Number of Stops
- Platoon dispersion model**
- Corridors**
 - To give weights
 - Time Space Diagram



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TYPICAL WORKFLOW REPORTING

- Tables**
 - Intersection Summaries
 - Detailed Intersection Analysis (HCM)
- Figures**
 - Turning Volumes (with options for various volume types)
 - LOS Summary by Intersection
 - Geometry and Traffic Control
 - Time Space Diagram
- Formats**
 - PDF, (Excel, CSV, HTML)

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TYPICAL WORKFLOW REPORTING

Generated with PTV VISTRO Toronto Project

Control Type: Signalized
Analysis Method: HCM 2010
Analysis Period: 10 minutes

Critical Vol / Capacity (C/C): 0.57
Average Delay (sec / min): 30.4 / 2

Level of Service: C

Intersection Setup		North				South				East				West			
Approach	Signal	Thru	Right	Left	Thru	Right											
Turning Movement		Left	Thru	Right	Left	Thru											
Lane Width		12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00		
No. Lanes in Project		0	1	0	0	0	0	0	1	0	0	0	0	0	0		
Right-of-Way		11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00	11.00		
Speed		30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00	30.00		
Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Crosswalk		yes															

Volumes		North				South				East				West			
Name	Signal	Thru	Right	Left	Thru	Right											
Base Volume (Peak Demand)		100	200	20	100	200	50	60	60	60	60	60	60	60	60		
Base Volume Adjustment Factor		1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000		
Heavy Vehicle Percentage (%)		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Growth Rate		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		
Max Projected Volume (Sat)		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Max Observed Volume (Sat)		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Max Observed Volume (Peak)		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Max Observed Volume (Peak)		0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Platoon Dispersion (m/s)		0	0	0	0	0	0	0	0	0	0	0	0	0	0		

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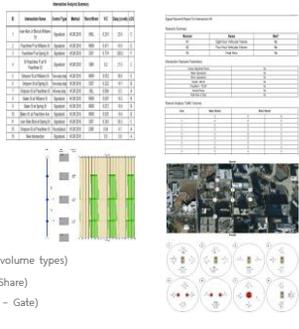
VISTRO REPORTING

Quantitative Reports

- Network Summaries
 - Analysis Summary
 - Trip Generation / Distribution
 - Volume Summary
- Intersection Analysis Report
- PDF, HTML, csv

Graphical Reports

- Turning Volumes (with options for various volume types)
- Turning Volume Percentage by Zone (Fair Share)
- Link Volume Percentage Distribution (Zone - Gate)
- LOS Summary by Intersection
- Geometry



Network Data Table:

ID	Intersection Name	Inter Type	Area	Direction	CI	Scenario	Year
1	1st St / 2nd St	Signal	12345	W	10	1	2015
2	3rd St / 4th St	Signal	54321	E	11	1	2015
3	5th St / 6th St	Signal	98765	N	12	1	2015
4	7th St / 8th St	Signal	23456	S	13	1	2015
5	9th St / 10th St	Signal	67890	W	14	1	2015
6	11th St / 12th St	Signal	01234	E	15	1	2015
7	13th St / 14th St	Signal	45678	N	16	1	2015
8	15th St / 16th St	Signal	89012	S	17	1	2015
9	17th St / 18th St	Signal	34567	W	18	1	2015
10	19th St / 20th St	Signal	78901	E	19	1	2015
11	21st St / 22nd St	Signal	23456	N	20	1	2015
12	23rd St / 24th St	Signal	67890	S	21	1	2015
13	25th St / 26th St	Signal	01234	W	22	1	2015
14	27th St / 28th St	Signal	45678	E	23	1	2015
15	29th St / 30th St	Signal	89012	N	24	1	2015
16	31st St / 32nd St	Signal	34567	S	25	1	2015
17	33rd St / 34th St	Signal	78901	W	26	1	2015
18	35th St / 36th St	Signal	23456	E	27	1	2015
19	37th St / 38th St	Signal	67890	N	28	1	2015
20	39th St / 40th St	Signal	01234	S	29	1	2015
21	41st St / 42nd St	Signal	45678	W	30	1	2015
22	43rd St / 44th St	Signal	89012	E	31	1	2015
23	45th St / 46th St	Signal	34567	N	32	1	2015
24	47th St / 48th St	Signal	78901	S	33	1	2015
25	49th St / 50th St	Signal	23456	W	34	1	2015
26	51st St / 52nd St	Signal	67890	E	35	1	2015
27	53rd St / 54th St	Signal	01234	N	36	1	2015
28	55th St / 56th St	Signal	45678	S	37	1	2015
29	57th St / 58th St	Signal	89012	W	38	1	2015
30	59th St / 60th St	Signal	34567	E	39	1	2015
31	61st St / 62nd St	Signal	78901	N	40	1	2015
32	63rd St / 64th St	Signal	23456	S	41	1	2015
33	65th St / 66th St	Signal	67890	W	42	1	2015
34	67th St / 68th St	Signal	01234	E	43	1	2015
35	69th St / 70th St	Signal	45678	N	44	1	2015
36	71st St / 72nd St	Signal	89012	S	45	1	2015
37	73rd St / 74th St	Signal	34567	W	46	1	2015
38	75th St / 76th St	Signal	78901	E	47	1	2015
39	77th St / 78th St	Signal	23456	N	48	1	2015
40	79th St / 80th St	Signal	67890	S	49	1	2015
41	81st St / 82nd St	Signal	01234	W	50	1	2015
42	83rd St / 84th St	Signal	45678	E	51	1	2015
43	85th St / 86th St	Signal	89012	N	52	1	2015
44	87th St / 88th St	Signal	34567	S	53	1	2015
45	89th St / 90th St	Signal	78901	W	54	1	2015
46	91st St / 92nd St	Signal	23456	E	55	1	2015
47	93rd St / 94th St	Signal	67890	N	56	1	2015
48	95th St / 96th St	Signal	01234	S	57	1	2015
49	97th St / 98th St	Signal	45678	W	58	1	2015
50	99th St / 100th St	Signal	89012	E	59	1	2015

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VISTRO ADDITIONAL FEATURES

Mitigation Analysis Parameters

- Compare Mitigation Strategies for Intersections
- Geometry / Lane Configuration
- Traffic Control

Scenario Management

- Various analysis hours, years
- Various Network configurations
- All in one project setup

Data Import / Export

- Visum
- Vissim
- Synchro



Scenario: PM Build Out

Scenarios

Base Scenario: [On/Off]

1: AM Existing [On/Off]

2: AM No Build [On/Off]

3: AM Build Out [On/Off]

4: PM Existing [On/Off]

5: PM No Build [On/Off]

6: PM Build Out [On/Off]

X [Close]

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PTV VISTRO GUI: COMPLETELY NEW INTERFACE

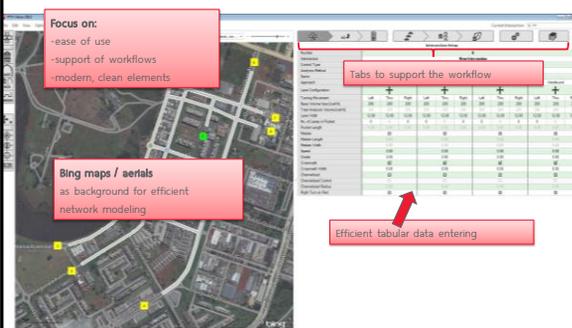
Focus on:

- ease of use
- support of workflows
- modern, clean elements

Bing maps / aerals as background for efficient network modeling

Efficient tabular data entering

Tabs to support the workflow

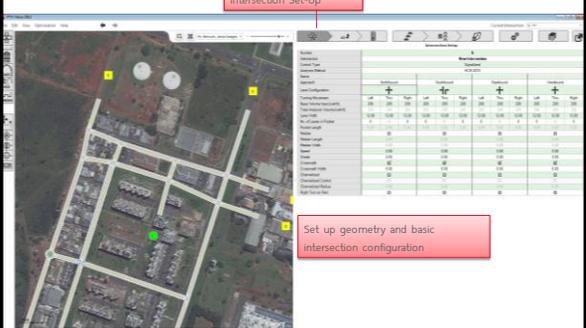


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PTV VISTRO GUI

Intersection Set-Up

Set up geometry and basic intersection configuration



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PTV VISTRO GUI: SOME NICE DETAILS ...

Intersection details

Efficient lane configuration through templates and dialog

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1 Slide 25

Detailed description: This screenshot shows the PTV VISTRO GUI interface. On the left, there is an aerial view of a road intersection with a red box highlighting a specific area labeled 'Intersection details'. On the right, there is a 'Lanes' configuration panel with a grid of icons representing different lane types (e.g., through, left-turn, right-turn, bus, etc.). A red box points to this panel with the text 'Efficient lane configuration through templates and dialog'. The PTV VISTRO logo is visible in the bottom left corner, and '1 Slide 25' is in the bottom right corner.

PTV VISTRO GUI

Traffic Volume

Define volumes:
-Base volume
-Diverted trips
-Pass by trips
-In process volume
-other

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1 Slide 26

Detailed description: This screenshot shows the PTV VISTRO GUI interface. On the left, there is an aerial view of a road network with yellow markers. On the right, there is a 'Traffic Volume' data table with columns for 'Volume' and 'Direction'. A red box points to the top of this table with the text 'Traffic Volume'. Below the table, there is a 'Define volumes' section with a list of options: '-Base volume', '-Diverted trips', '-Pass by trips', '-In process volume', and '-other'. A red box highlights this list with the text 'Define volumes:'. The PTV VISTRO logo is visible in the bottom left corner, and '1 Slide 26' is in the bottom right corner.

PTV VISTRO GUI

Traffic Control

Level of Service calculation
(industry standard methodologies)
HCM 2010/200
Kimber
ICU circular
... and more to come

PTV VISTRO

1 Slide 27

Detailed description: This screenshot shows the PTV VISTRO GUI interface. On the left, there is an aerial view of a road network with yellow markers. On the right, there is a 'Traffic Control' data table with columns for 'Control' and 'Direction'. A red box points to the top of this table with the text 'Traffic Control'. Below the table, there is a 'Level of Service calculation' section with a list of options: '(industry standard methodologies)', 'HCM 2010/200', 'Kimber', 'ICU circular', and '... and more to come'. A red box highlights this list with the text 'Level of Service calculation'. The PTV VISTRO logo is visible in the bottom left corner, and '1 Slide 27' is in the bottom right corner.

PTV VISTRO GUI

TIA Functionality (3 Steps)

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1 Slide 28

Detailed description: This screenshot shows the PTV VISTRO GUI interface. On the left, there is an aerial view of a road network with yellow markers. On the right, there is a 'TIA Functionality' data table with columns for 'Functionality' and 'Direction'. A red box points to the top of this table with the text 'TIA Functionality (3 Steps)'. The PTV VISTRO logo is visible in the bottom left corner, and '1 Slide 28' is in the bottom right corner.

PTV VISTRO GUI

1. Trip Generation

Generate Trips ...
 by entering
 - Trip generation rate
 - Quantity
 or by directly entering the number of generates trips.
Additional information by zone:
 - Land use code
 - Name
 ...

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PTV VISTRO GUI

2. Trip Distribution

Distribute ...
 Shares from zones to all gates/zones in the network.

Zone	Volume	Weight	Share
Zone 1	100	1.0	100%
Zone 2	200	2.0	200%
Zone 3	300	3.0	300%
Zone 4	400	4.0	400%
Zone 5	500	5.0	500%
Zone 6	600	6.0	600%
Zone 7	700	7.0	700%
Zone 8	800	8.0	800%
Zone 9	900	9.0	900%
Zone 10	1000	10.0	1000%

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PTV VISTRO GUI

3. Trip Assignment

Assign ...
 Volume shares for every OD relation to a user defined set of paths.

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PTV VISTRO GUI

Signal Optimisation

Assign weights to corridors

Network wide signal optimisation

Display time space diagrams for selected corridors

Corridor	Weight	Value
Corridor 1	1.00	1.00
Corridor 2	2.00	2.00
Corridor 3	3.00	3.00
Corridor 4	4.00	4.00
Corridor 5	5.00	5.00
Corridor 6	6.00	6.00
Corridor 7	7.00	7.00
Corridor 8	8.00	8.00
Corridor 9	9.00	9.00
Corridor 10	10.00	10.00

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PTV VISTRO GUI

Mitigation Options

Category	Option	Value	Value	Value	Value
Traffic	Signal	1	1	1	1
	Stop	1	1	1	1
	Yield	1	1	1	1
	Priority	1	1	1	1
Lane	1	1	1	1	1
	2	1	1	1	1
	3	1	1	1	1
	4	1	1	1	1
Signal	1	1	1	1	1
	2	1	1	1	1
	3	1	1	1	1
	4	1	1	1	1

Mitigation options
To analyse and present several options for each intersection

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