



Directions in Diagnostics

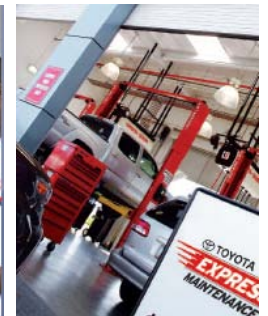
Tom Trisdale



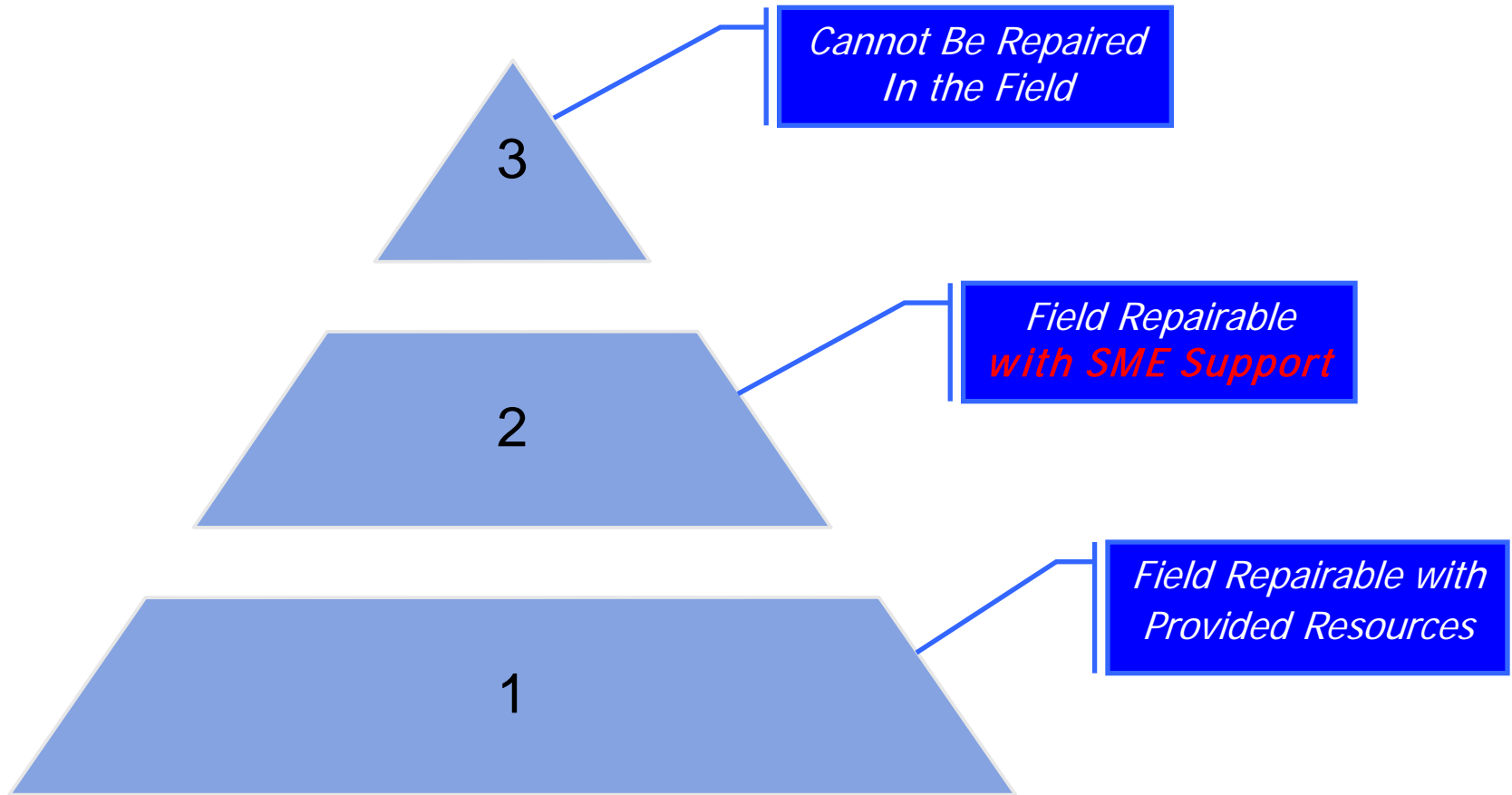
ETI ToolTech: April 21, 2010

Customer 1st

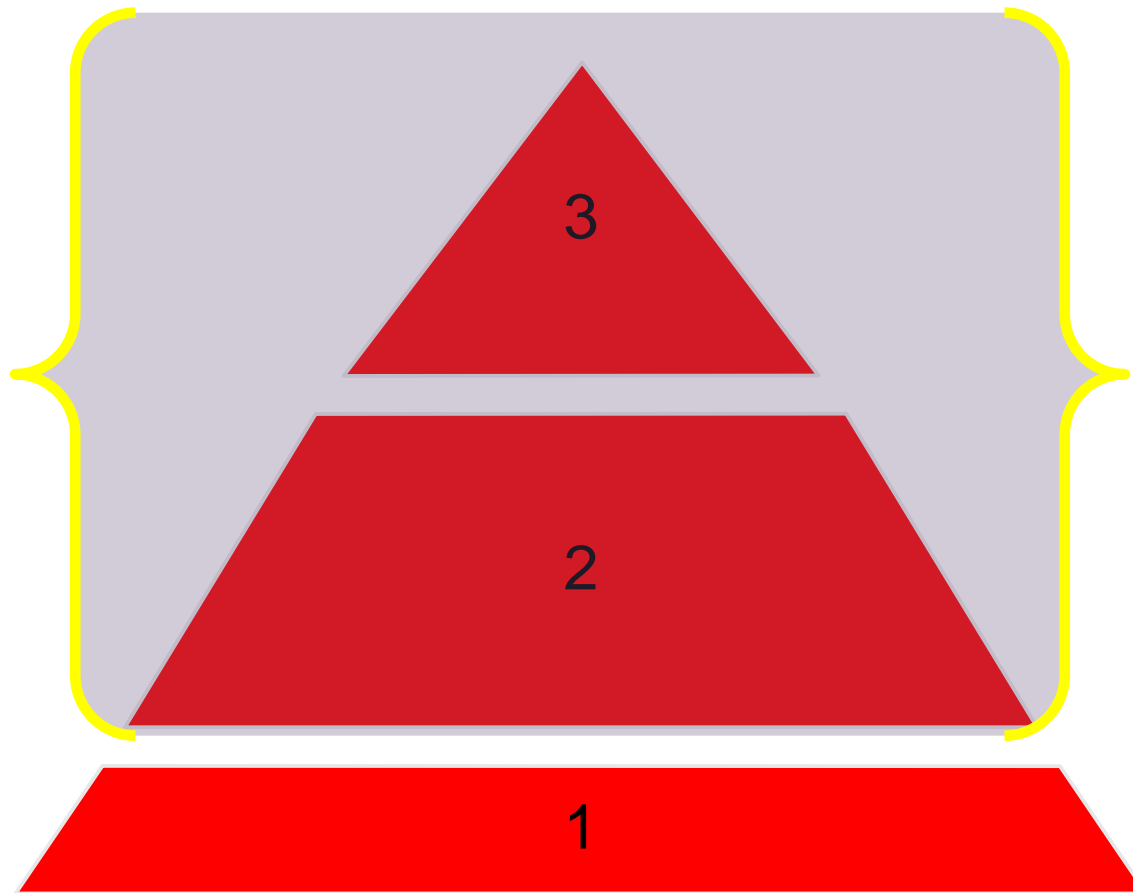
- ▶ Product Q. D. R.
- ▶ Fixed Right
- ▶ High Value Service
- ▶ Convenient and Quick



Service Complexity



More Service Events Require Support



Service Support Resources

Vehicle

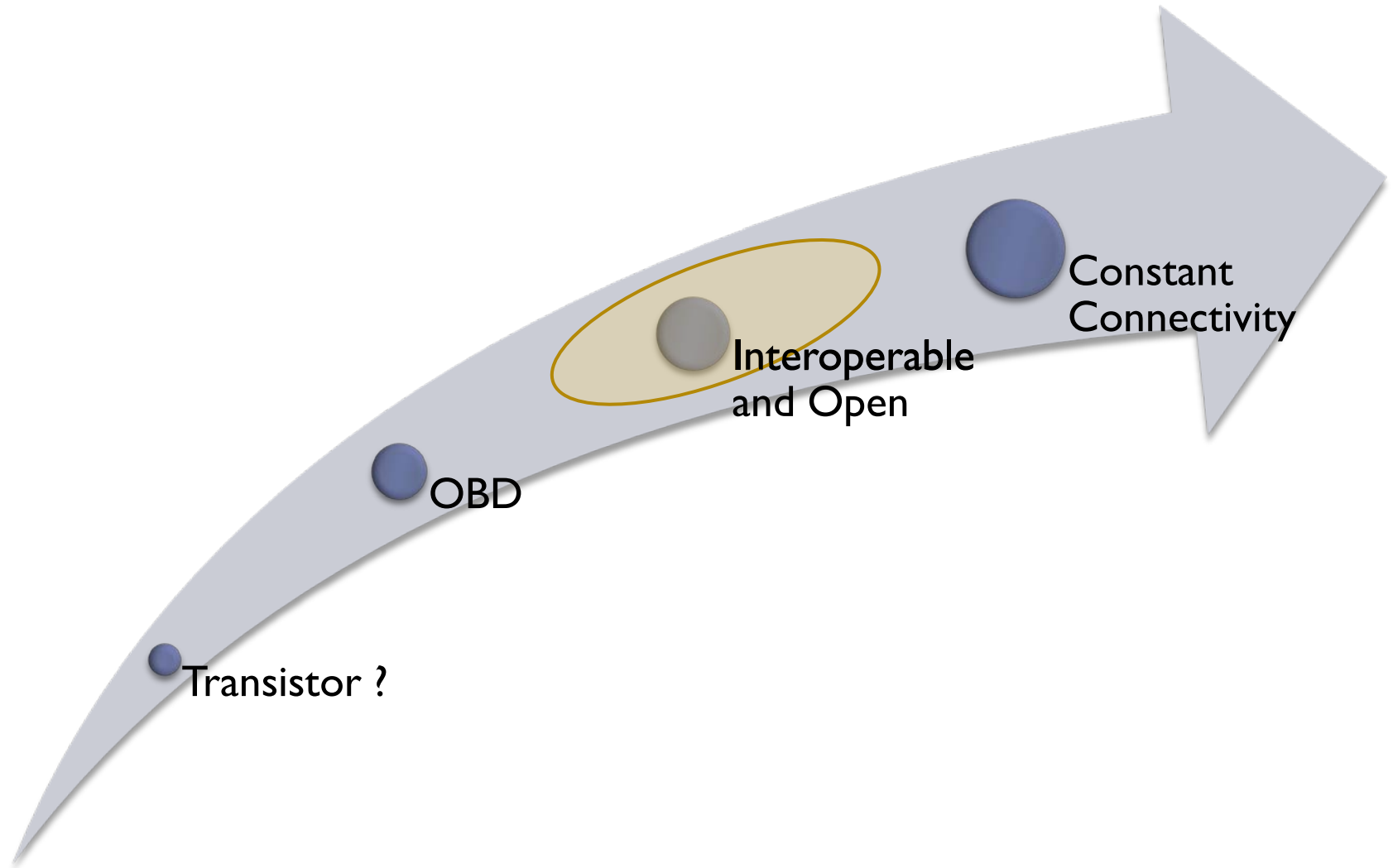
Tooling

Information

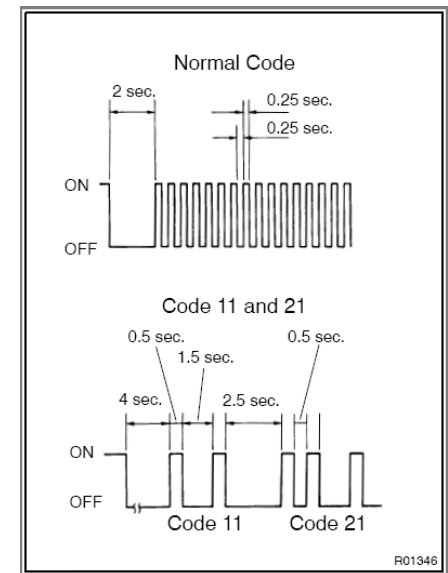
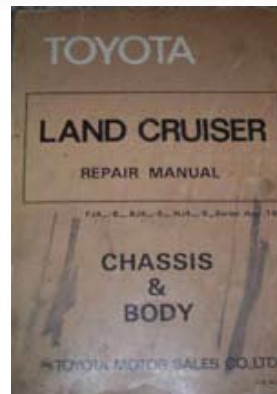
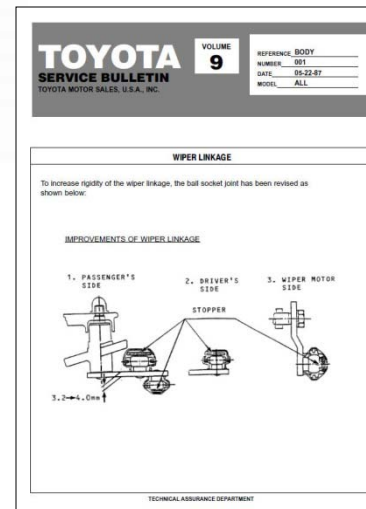
Technical Support



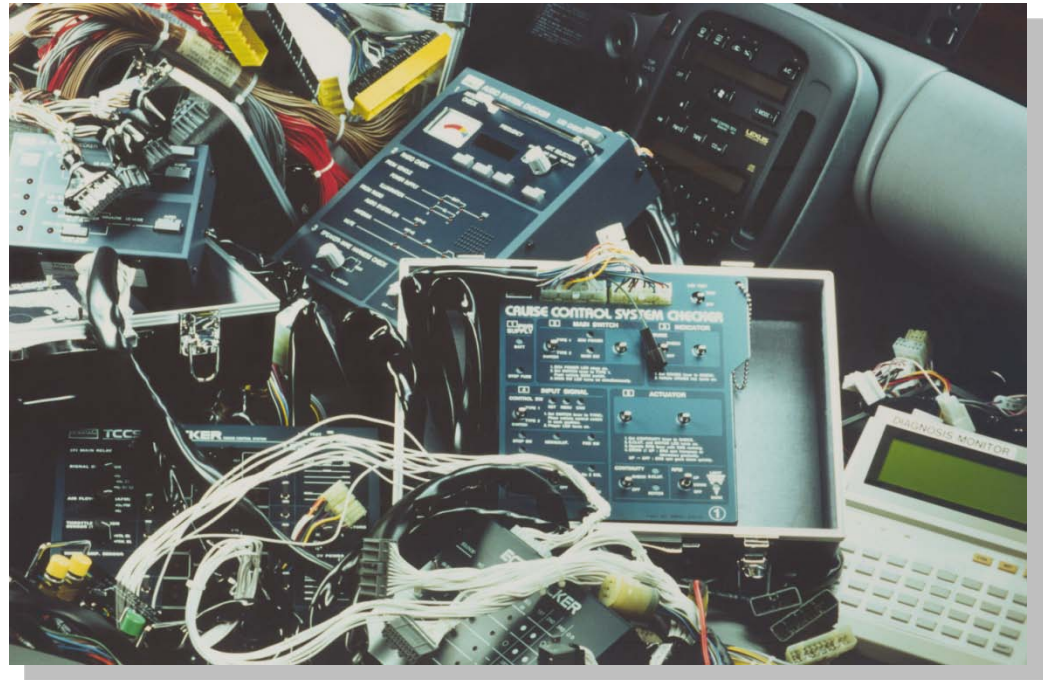
Evolution of Service Support



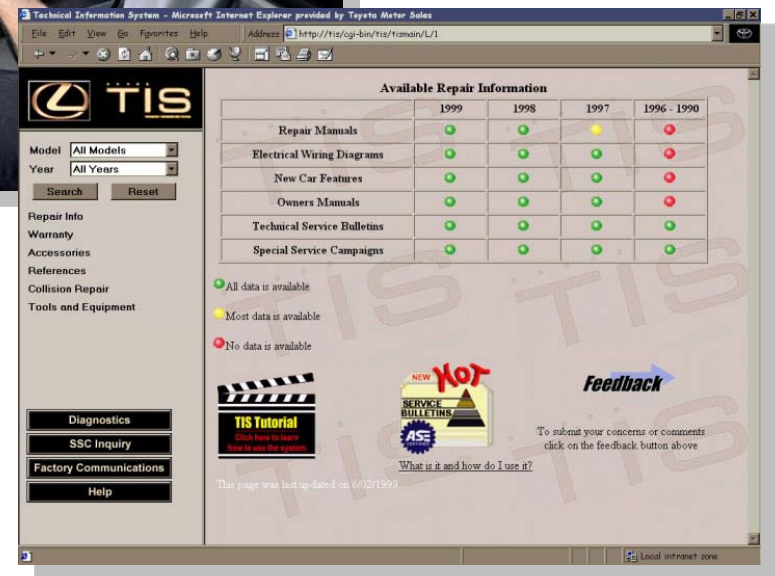
Transistor What?



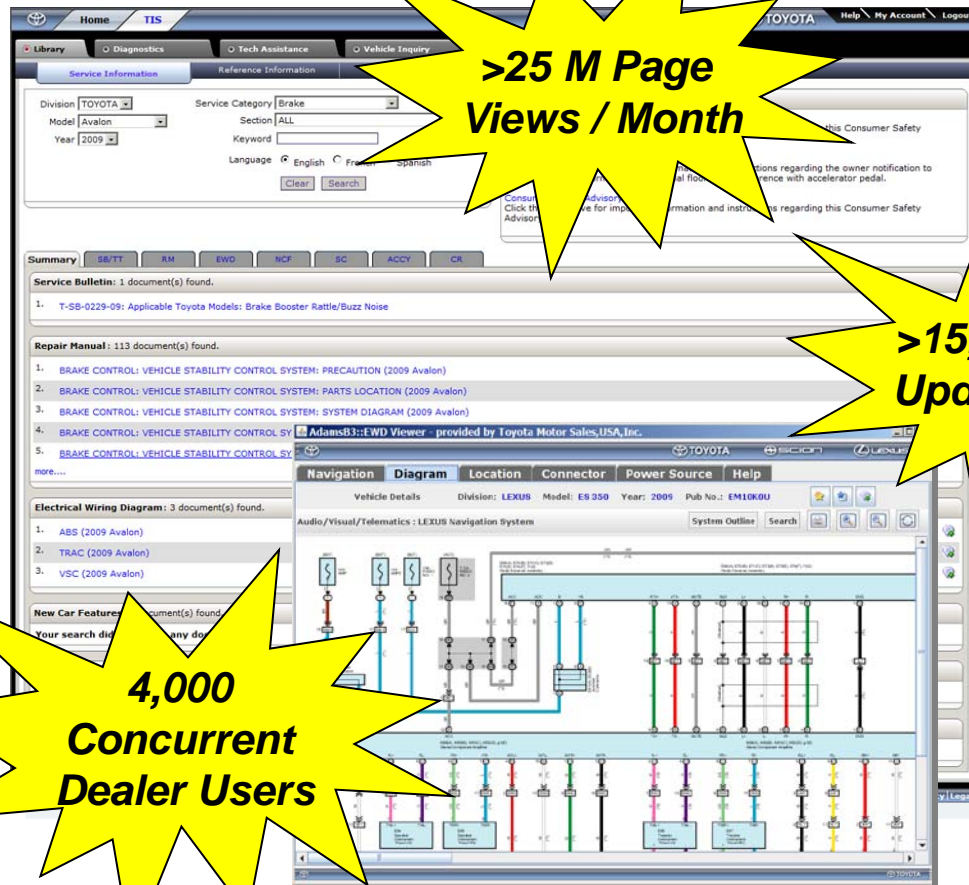
The Dawn of OBD



OBD in Y2K



Moving to I and O: 2006 - 2009



>15,000 Flash Updates / Day

**4,000
Concurrent
Dealer Users**

**TS/Tech Ratio
1:5**

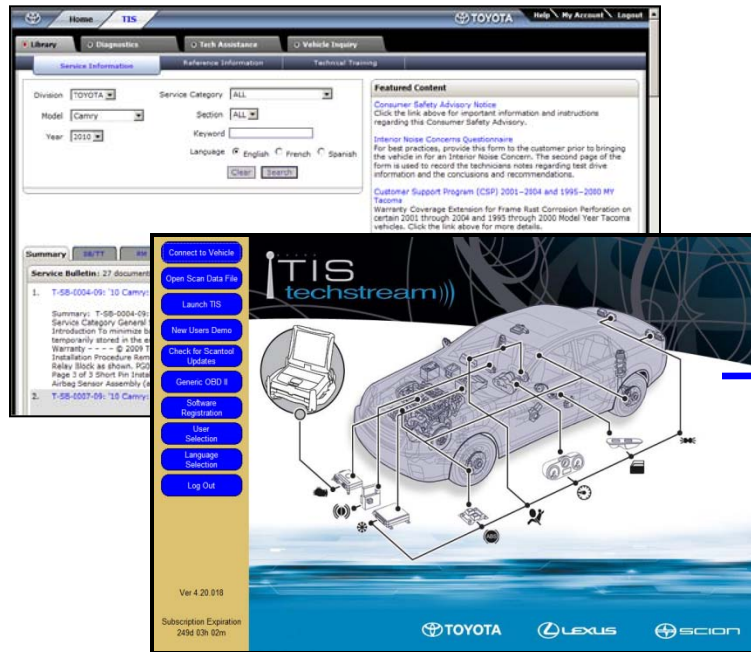
**>30,000 Vehicle
Connections / Day**



Toyota Motor Sales, U.S.A., Inc.



Expanding Diagnostic Capacity - 2009



TIS and Techstream Software

techstream)))
LITE

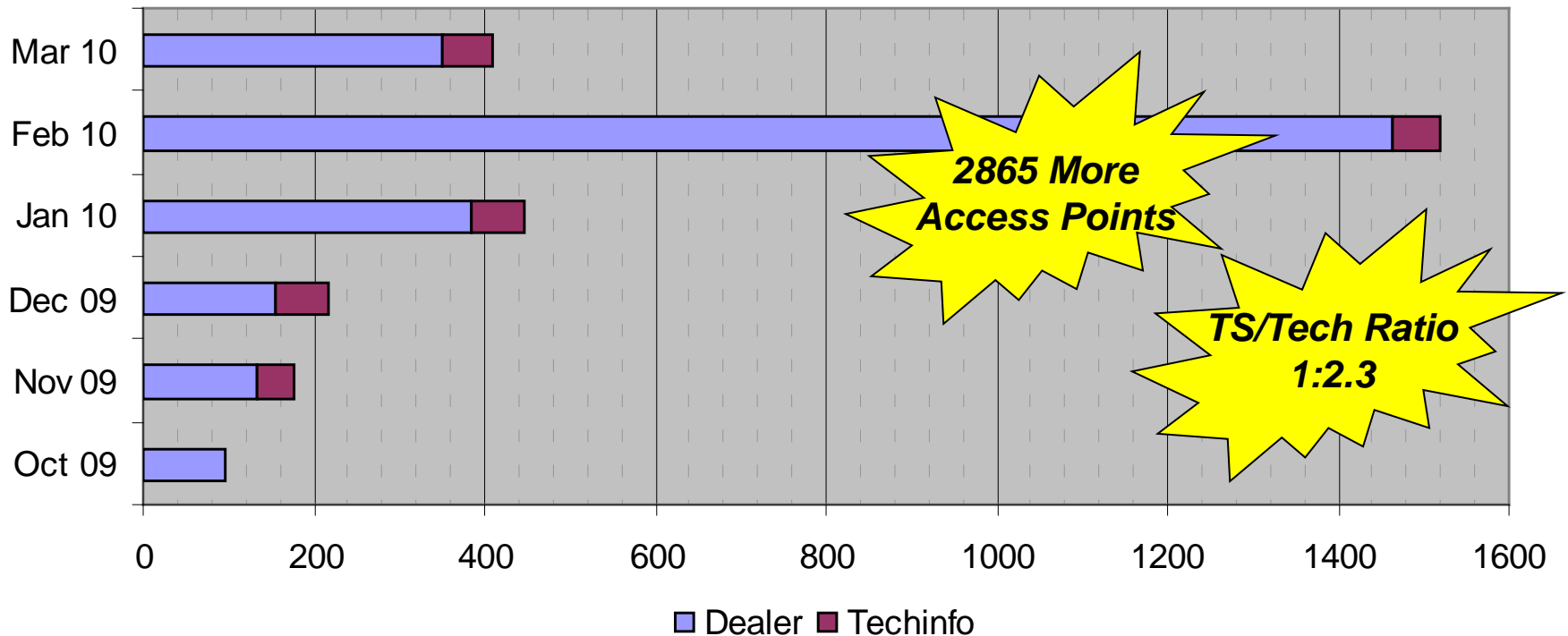


TIS
techstream)))



Techstream Lite – Immediate Value

TS Lite Sales / Month

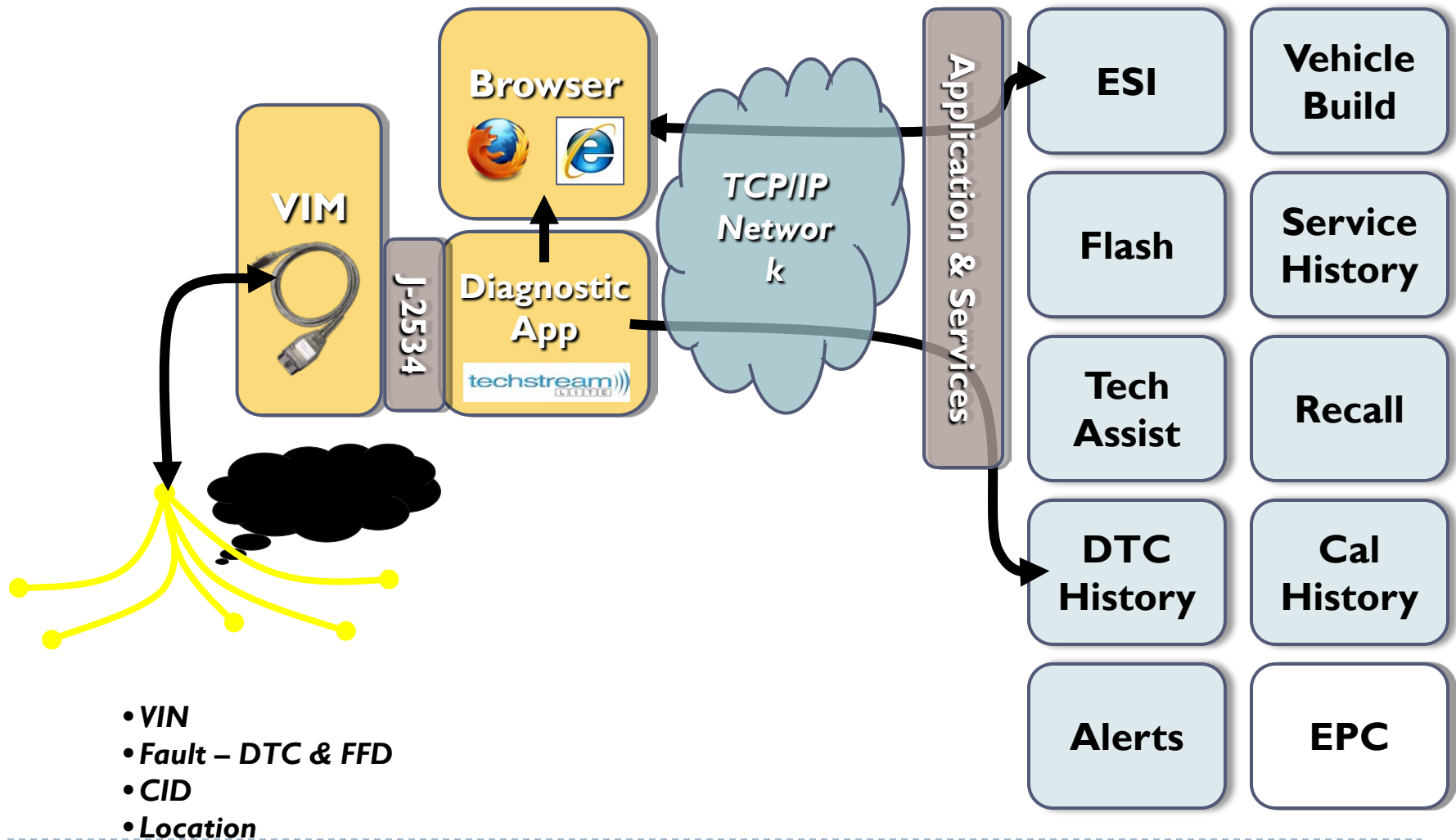


Foundation for a Flexible Future

- 1) Self-Identifying Vehicle
- 2) Hardware Freedom (J-2534)
- 3) Web Portal
- 4) Loosely Coupled Scantool to Service Information
- 5) Ready Access to Other Relevant Content
- 6) Situational Response and Dynamic Messaging
- 7) Collection and Aggregation of Diagnostic Data
- 8) Operational History (Super FFD) and Symptom DTC



Interoperable and Open



Interoperation

Techstream - 10737

File Function Setup TIS User Help

System Select Stored Data

2009 Corolla
2ZR-FE
5TDZA22C14S024463

2009_Corolla_22
File Notes
Health Check
Data 1-12

Expand>>

TIS Search

Print

Back

12/02/2010 15:23:33 Campaign Available: **YES**

S309-06

Default User

DLC 3

Tire Pressure [psi(gauge)]

Sensor 1: 36.3 Sensor 2: 36.3
Sensor 3: 36.6 Sensor 4: 35.5
Sensor 5: -14.5

Compensation Pressure [psi(gauge)]

Front : 40.5
Rear : 40.5

Health Check Results

System	Monitor Status	DTC	Curr	Pend	Hist	Perm	SB	Calibration	Update
Engine and ECT	Inc	P0010	X	X	X		Yes	30285000	Yes
		P0013	X	X	X		No		
		P0102	X	X	X		Yes		
		P0113	X	X	X		No		
		P0118	X	X	X		Yes		
		P0123	X	X	X		Yes		
		P0343	X	X	X		No		
		P0368	X	X	X		No		
		P0453	X	X	X		Yes		
		P0504	X		X		No		
		P2135	X	X	X		No		
		P2138	X	X	X		No		
		B2799	X		X		Yes		
Cruise Control	-							-	

12/02/2010 15:23:33 Campaign Available: **YES**

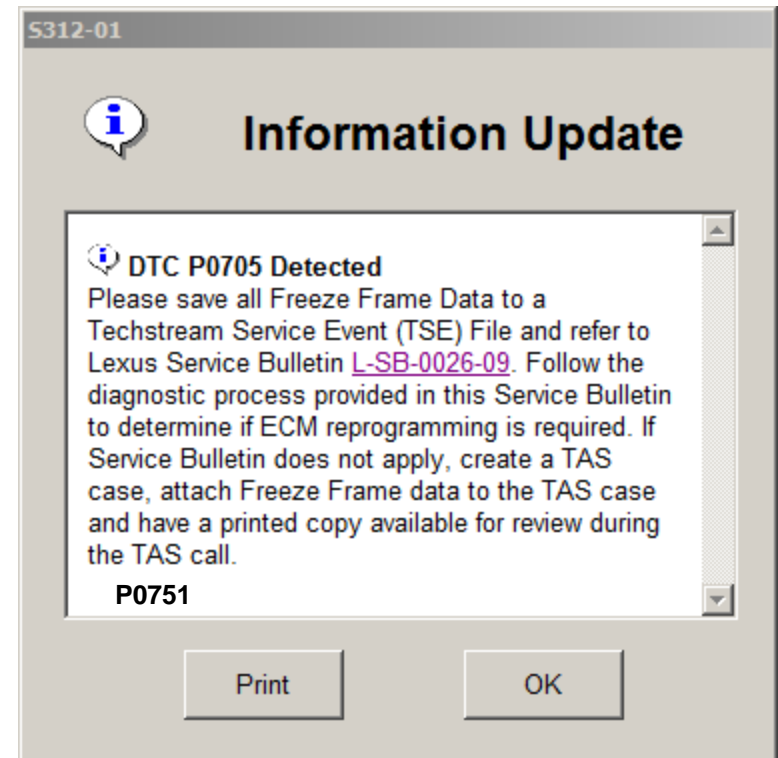
S309-06

Default User

DLC 3

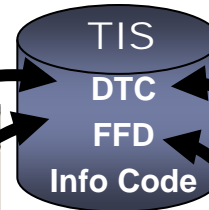
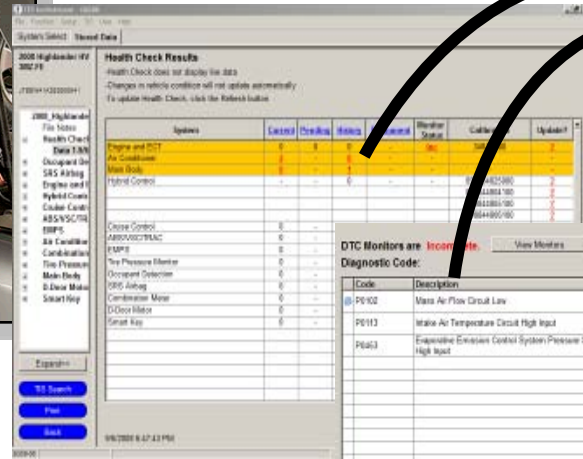
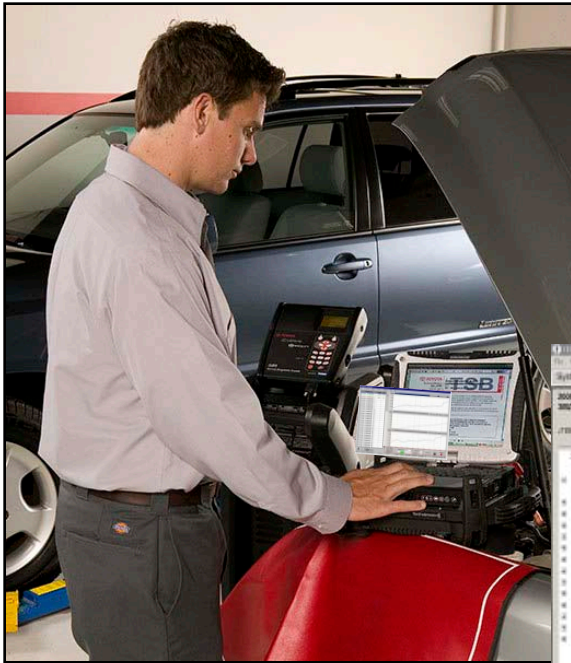
Dynamic Messaging

- ▶ **Situational Techstream Alerts**
 - ▶ TSB or TechTip Available
 - ▶ Message Matches Document
 - ▶ Warning on Repair or Parts
 - ▶ Triggered by individual VIN & DTC or Calibration
 - ▶ Displayed Immediately on Techstream



Data Aggregation

Passive Data Collection



Information Code 795 (5304-05)		
Parameter	Value	Unit
Information 5	795	
Generator(MG1) Rev	0	rpm
Motor(MG2) Revolution	-128	rpm
Generator(MG1) Torq	0	Nm
Motor(MG2) Torq	0	Nm
Inverter Temp (MG1)	68	F
Inverter Temp (MG2)	73	F
Inverter Temp MG2(Ho2)	70	F
Motor Temp MG2(Ho1)	70	F
Request Power	0	Kw

Freeze Frame Data		
P0102 Mass Air Flow Circuit Low		
Parameter	Value	Unit
Vehicle Speed	0	km/h
Engine Speed	0	rpm
Calculated Load	0.0	%
Vehicle Load	0.0	%
Total	0.00	grams
Atmosphere Pressure	0	mmHg
Coolant Temp	70	F
Intake Air	40	F
Engine Run Time	0	h
Initial Engine Coolant Temp	17.2	F
Initial Intake Air Temp	40.0	F
Battery Voltage	12.1	V
Accel Sens. No. 1 Volt %	15.4	%
Accel Sens. No. 2 Volt %	17.1	%
Throttle Position Volt %	19.2	%
Throttle Sensor #2 Volt %	17.3	%
Throttle Sensor Position	0.0	%
Throttle Motor Duty	16.8	%
Inverter (MG1)	0.00	rpm
Inverter Torque (Cylinder)	0.000	mm
Fuel Pump/Speed Status	OFF	OFF
Vacuum Pump	OFF	OFF
EVAP Purge Valve	0.0	%
Crash Purge Valve	0.0	%
Purge Density Limit Status	0.000	mm
EVAP System Vent Valve	OFF	OFF

Data Analysis and Support

* VIN: JTHBK262985066809 [Find All Info](#) [Find TAS Cases Only](#)

Division:
* Repair Order:
Repair Date:

JTHBK262985066809 DTC Detail - Microsoft Internet Explorer provided by Toyota Motor Sales, USA, Inc.

Dealer: PLAZA LEXUS	Log Timestamp: 10/06/2009 12:09:13
Mil Log Type: DTCFFD	Information Code:
DTC Code: P0174	

Info Code / Freeze Frame Data

Parameter	-3	-2	-1	0	1	Units
Vehicle Speed				0		km/h
Engine Speed				803		rpm
Calculate Load				37.2		%
Vehicle Load				20.0		%
MAF				3.96		gm/s
Atmosphere Pressure				99		kPa
Coolant Temp				85		C
Intake Air				40		C
Ambient Temperature				21		C
Engine Run Time				86		s
Initial Engine Coolant Temp				80.6		C
Initial Intake Air Temp				51.2		C
Battery Voltage				13.2		V
Accel Sens. No.1 Volt %				15.6		%
Accel Sens. No.2 Volt %				32.1		%
Throttle Sensor Volt %				15.6		%
Thrott Sensor #2 Volt %				47.4		%
Throttle Sensor Position				0.0		%
Throttle Motor DUTY				15.6		%
Fuel Press				4030		kPa
Injection Volum (Cylinder1)				0.134		ml
Fuel Pump Speed Control				ON		
Fuel Pump/Speed Status				ON		
Vacuum Pump				OFF		
Combustion Status (D4)				Stoich1		
Fuel Pressure Target Value				4.00		MPa
Fuel Pump Duty (D4)				16.0		%
High Pres FP Duty				18.67		%
SCV Status (D4)				ON		
SCV Angle (D4)				-5.41		deg

13 results

Connect

10/09/2009
10/08/2009
10/07/2009
10/06/2009
09/29/2009
09/18/2009
09/18/2009
09/18/2009
09/17/2009
09/17/2009
09/17/2009
09/12/2009
09/12/2009

P - Power

Exterior

Accessories

EF : Rear
Includes:

16

Update

No
Yes
Yes
No

25
Rows Displayed

, B1424 , P0171 ,
, P0174 , P0301 ,
, P0301

Interior Fabric: *

1 : Trunk Mat PT : Premium Package

Information Overload



Techstream - 10942

File Function Setup TIS User Help

System Select

2010 LS600H
2UR-FSE

JTHDU1EF7A5010939

Health Check

Customize Setting

ECU Reprogramming

CAN Bus Check

TIS Search

Print

Main Menu

2010 LS600H
2UR-FSE

JTHDU1EF7A5010939

Health Check

Customize Setting

ECU Reprogramming

CAN Bus Check

TIS Search

Print

Main Menu

System Select

Stored Data

System Selection Menu

Select desired system and then press Live Data to access the ECU.

System

Yellow = ECU status unknown.

System

White = ECU communication OK.

*System

White w/Asterisk = ECU not supported or not responding.

All ECUs

Powertrain

Chassis

Body Electrical

Pre-Collision	Pre-Collision 2	Main Body
ECM Gateway	ECB Gateway	Mayday Gateway
Body No.4	Body No.5	Driver Door
Passenger Door	Rear Left Door	Rear Right Door
Back Door	D-Door Motor	P-Door Motor
RL-Door Motor	RR-Door Motor	Driver Seat
Passenger Seat	Rear Left Seat	Rear Right Seat
Master Switch	D-SEAT SW	Center Console Switch
Rear Console Switch	Front Left Seat A/C	Front Right Seat A/C
Rear Left Seat A/C	Rear Right Seat A/C	Sliding Roof
Tilt&Telescopic	Combination Meter	Combination Switch
Steering Pad Switch	Intuitive P/A	Rain Sensor
AFS	Smart Access	Occupant Detection
Navigation System	Telematics	

S303-01

Start

S303-01

Techstream - 10942

Default User

DLC 3

2:25 PM



Techstream - 10942

File Function Techstream - 10942

System Select Stored Data Engine and ECT Live

2010 LS600H 2UR-FSE

JTHDU1EF7A5010939

Trouble Codes

Data List

Active Test

Monitor

Utility

TIS Search

Print

Close

Parameter	Value	Unit	Parameter	Value	Unit
MIL ON Run Distance	0	mile	Judge Time Engine Ignition	2.9	s
Running Time from MIL ON	0	min	Judge Time Engine Output	0.0	s
Time after DTC Cleared	3649	min	Fuel Level	Not Emp	
Distance from DTC Cleared	1918	mile	ISC Learning	Compl	
Warmup Cycle Cleared DTC	74		F/C for Engine Stop Req	ON	
TC and TE1	OFF		Engine Independent	Not Opr	
Ignition Trig. Count	403		Racing Operation	Not Opr	
Cylinder #1 Misfire Count	0		Request Warm-up	Not Req	
Cylinder #2 Misfire Count	0		Engine Independent Control	Not Opr	
Cylinder #3 Misfire Count	0		ISC Learning Value	3.82	L/s
Cylinder #4 Misfire Count	0				
Cylinder #5 Misfire Count	0				
Cylinder #6 Misfire Count	0				
Cylinder #7 Misfire Count	0				
Cylinder #8 Misfire Count	0				
All Cylinders Misfire Count	0				
Multi Cylinders Misfire Count	0				
Misfire RPM	0	rpm			
Misfire Load	0.00	g/rev			
Misfire Margin	-100.00	%			
Electric Fan Motor	ON				
Idle Fuel Cut	OFF				
FC TAU	OFF				
Requested Engine Torque	0.00	kW			
HV Target Engine Speed	0	rpm			
Actual Engine Torque	0	Nm			
Estimated Engine Torque	342	Nm			
Engine Run Time	255	s			
Request Engine Run Time	0.0	s			

Primary

200 ms

Default User

DLC 3

2:27 PM

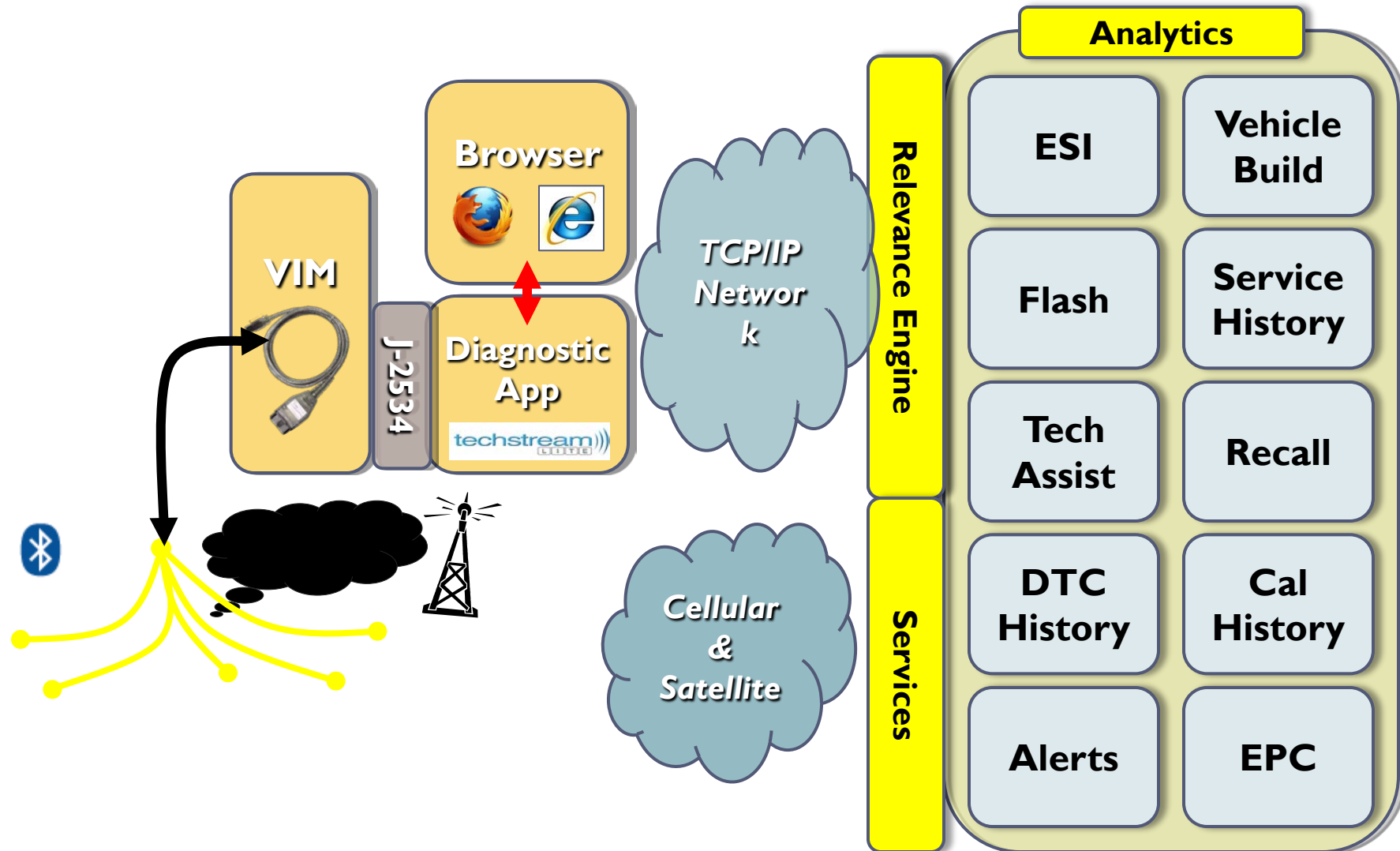


Simplify and Expedite Diagnosis!

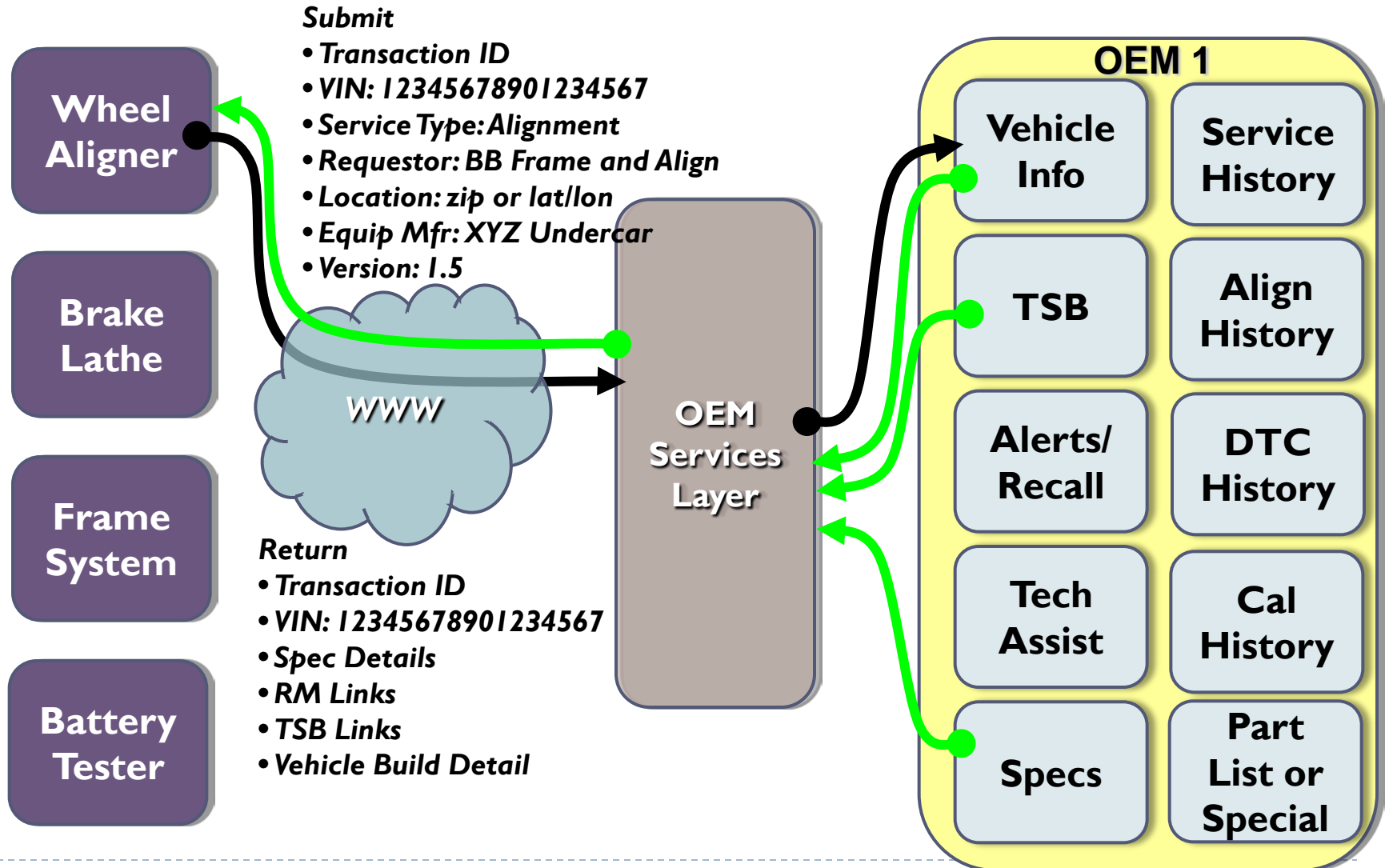
- ▶ Establish Greater Relevance
 - ▶ VIN + 2 to 5 words returns top items (most relevant)
- ▶ Make Information Easier to Navigate
 - ▶ Yokogushi
 - ▶ Alternative Platforms
- ▶ Identify the State of Health / Arrival or Pre-Arrival
 - ▶ Geo-fencing, telematics, individual vehicle website
- ▶ Lighter Client Application
 - ▶ Easier to update
- ▶ More Conditional / Situational Responses
 - ▶ Who,What,Where
 - ▶ Dynamic Troubleshooting (what have we seen, what is likely in a given situation)
- ▶ Community Collaboration
- ▶ Open Services
 - ▶ Expand Interoperation and Data Exchange
 - ▶ Beyond Dealership and include other Service Equipment
- ▶ What Really Fixed the Car!



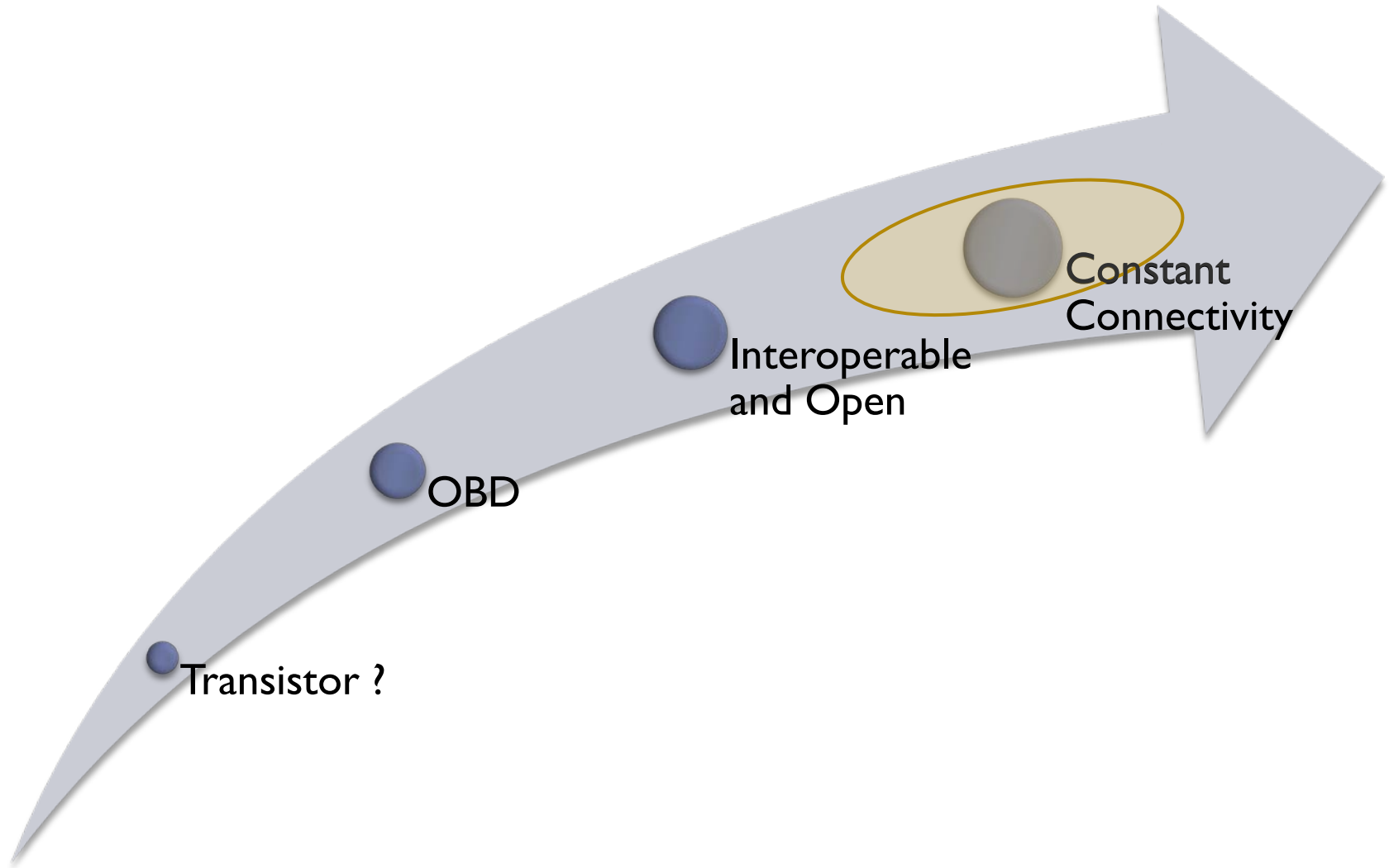
Expanding Capability



Expanding Service Interoperability



Evolution of Service Support



Thoughts, Questions, Big Ideas ?

