



# Digital Identity and the Connected Car

**Ashley Stevenson**  
**Identity Technology Director, ForgeRock**

Car + Internet = Big Change

# Convergence

Operational Technology

Internet, Cloud, Cybersecurity



Information Technology

Safety, Availability, Embedded

# Identity Basics

- Who's Who?
- What's What?
- Who can access What and When?

# Who's Who?



People





# sign in

## have a Macy's profile?

If you've already created a macy's.com profile, you can sign in here.

Email:

Password:

Password is case sensitive

[forgot your password?](#)

SIGN IN

## don't have a Macy's profile?

Create a profile now to take advantage of express checkout and other convenient features. It only takes a minute!

[see all the benefits of creating a profile](#)

[Privacy Policy](#)

CREATE



# What's What?



Things



Services

# Non-Person Identity Attributes



# Digital Identity



The information that makes something unique

# Credentials and Authentication:



## Establishing Digital Trust and Assurance

# Authorization: The Final Frontier



Yes or No?

# Authorization: The Final Frontier



Local Authorization

Or



External Authorization

Who can access What and When?

But wait, There's more...

# Federation, Context, Privacy, Relationships, and Digital Identity's Unique Role



UNITED FEDERATION of PLANETS

# Identity & Access Federation



# Context







# Dynamic

- Identity Attributes
- Trusted Credentials
- Knowledge
- Variables
- Perceived Risk
- Incentive



# Privacy and Consent



# Privacy Challenges

## Consumer Data Privacy Concerns Rising Rapidly

*How Concerned are You About Data Privacy & How Companies Use Customer Data?*



- Very Concerned
- Somewhat Concerned
- Not Concerned

**45%**

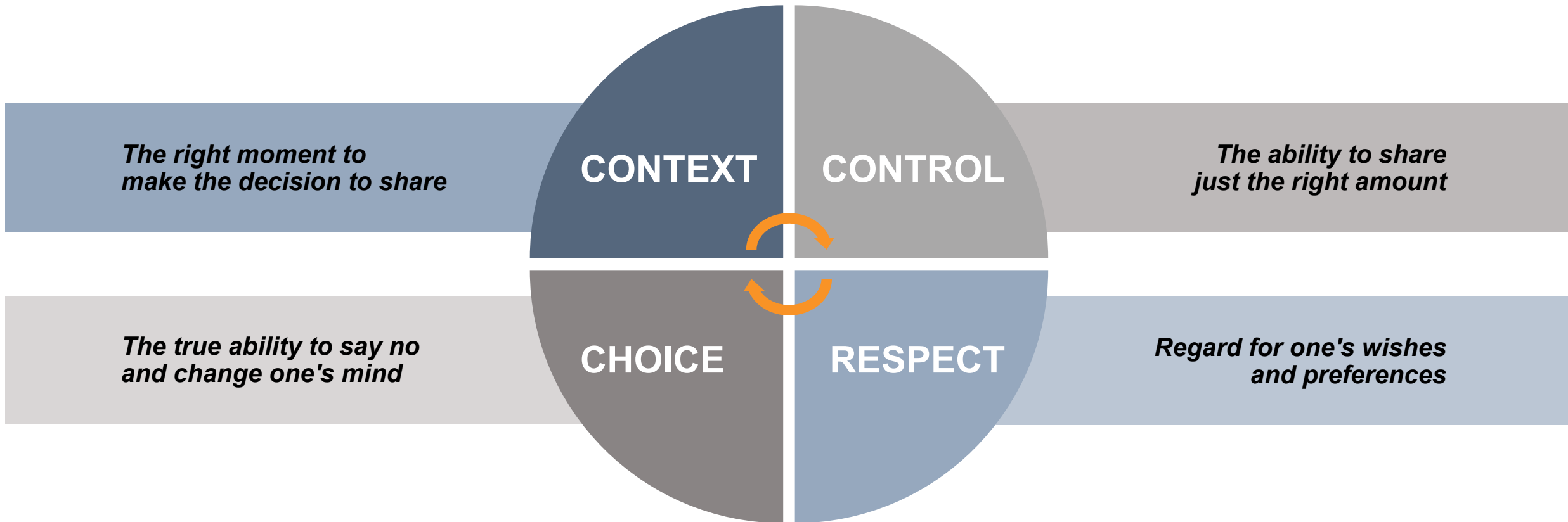
Are more worried about their Online privacy than one year ago

**74%**

Have limited their online activity in the last year due to privacy concerns

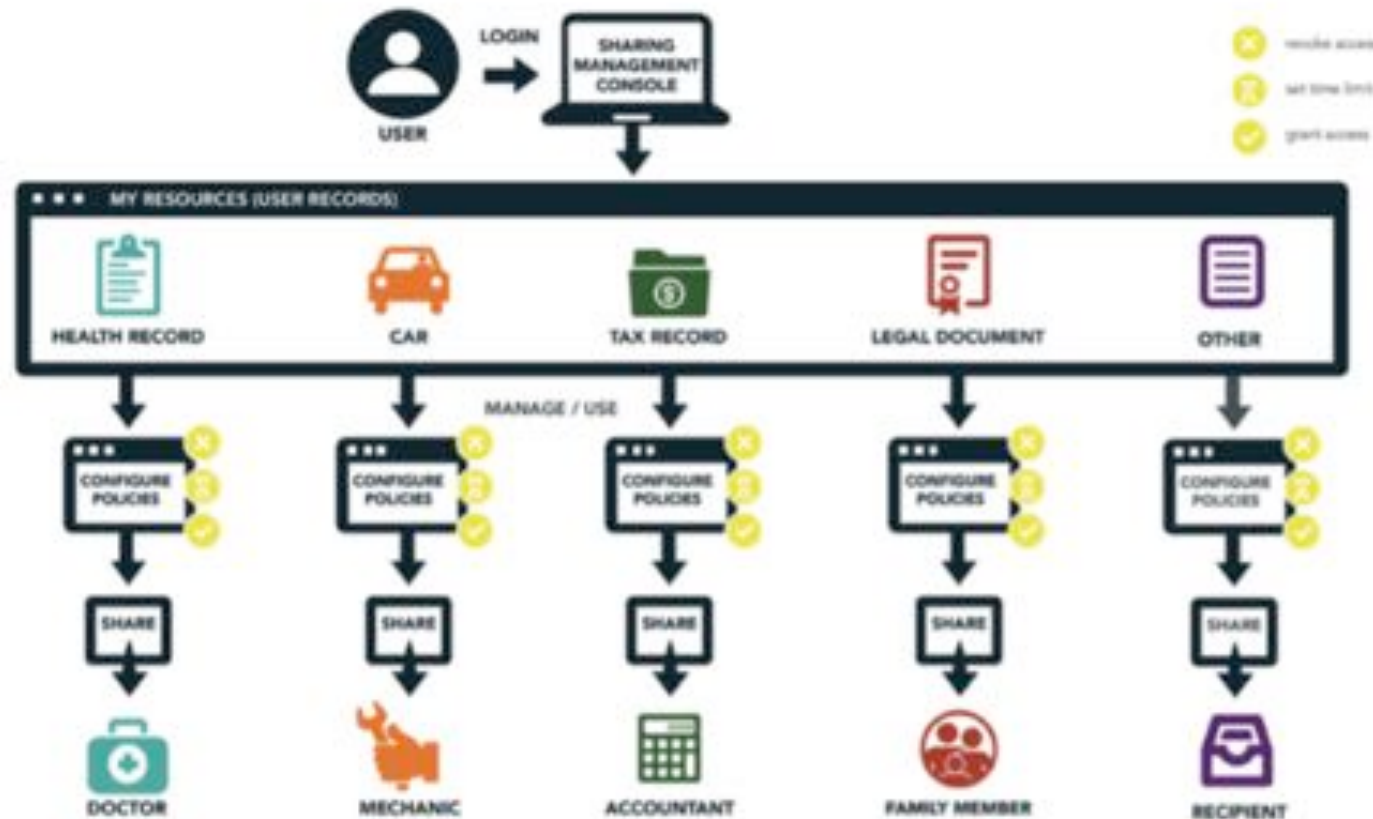
# User-Managed Access (UMA)

*An emerging standard for privacy and consent*



# User Manage Access

How individuals could control personal data and device access in the IoT environment

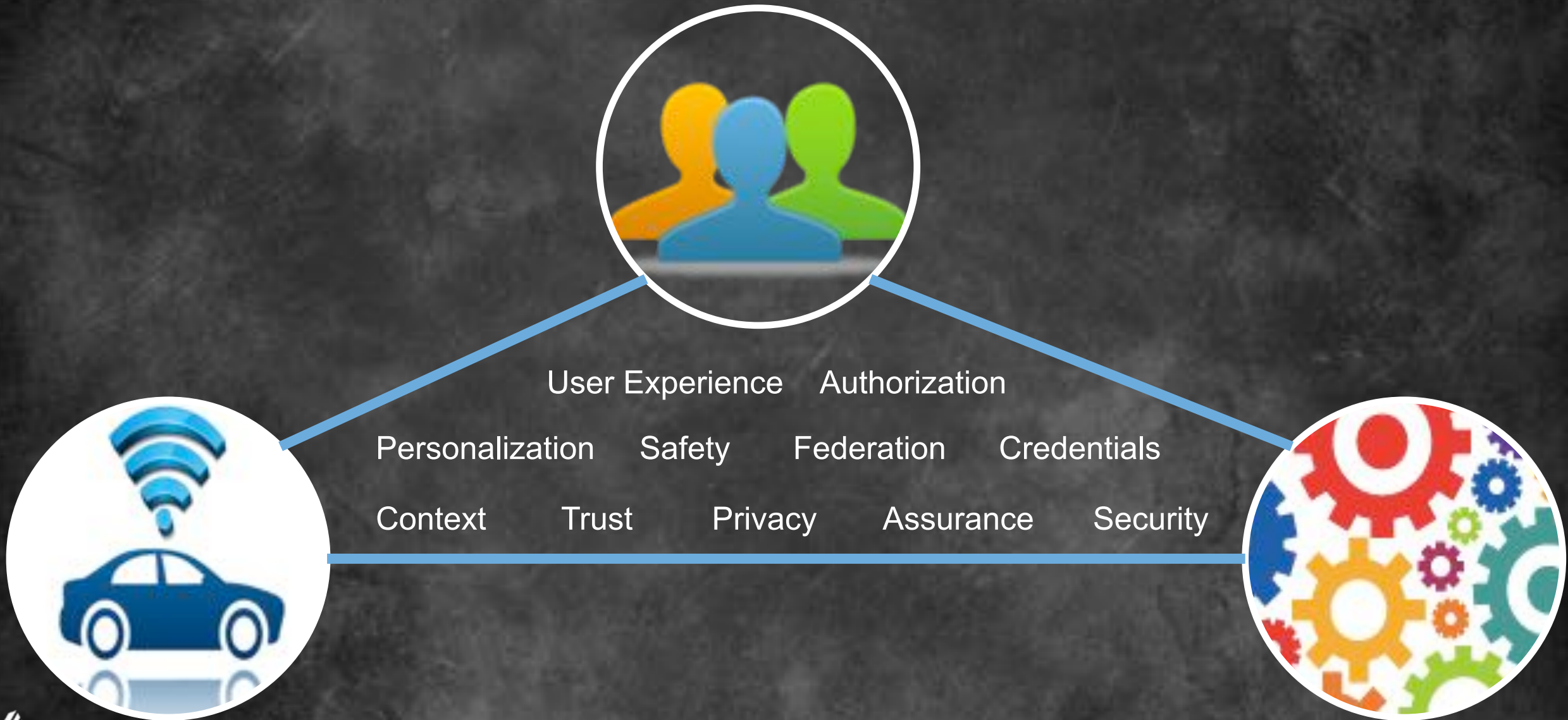




# Simplicity

The power of Identity Relationship Management

# Relationships bring clarity to complexity



# Identity's Unique Role



**User Experience**



**Security**

# Identity's Unique Role



**User Experience**



Function  
Experience  
Efficiency



Privacy  
Integrity  
Availability



**Security**

# Identity's Unique Role



**User Experience**



Availability  
Experience  
Function  
Efficiency  
Privacy  
Integrity



Integrity  
Availability  
Privacy  
Function  
Experience  
Efficiency



**Security**

# Digital Identity is **Everywhere** in Connected Cars



# Digital Identity **Inside and Outside of the Car**

## AGL Interconnected Systems



## AGL Intra-Car Systems



Navigation

Brakes

Steering

CAN

# Varying Roles for Users and Access



**Driver**



**Owner**



**Maintenance**

# Protecting Car <-> Cloud Connections



Use an AGL Binding as primary authentication and authorization interface for all inbound/outbound car <-> Internet connections

# Protecting Car <-> Cloud Connections

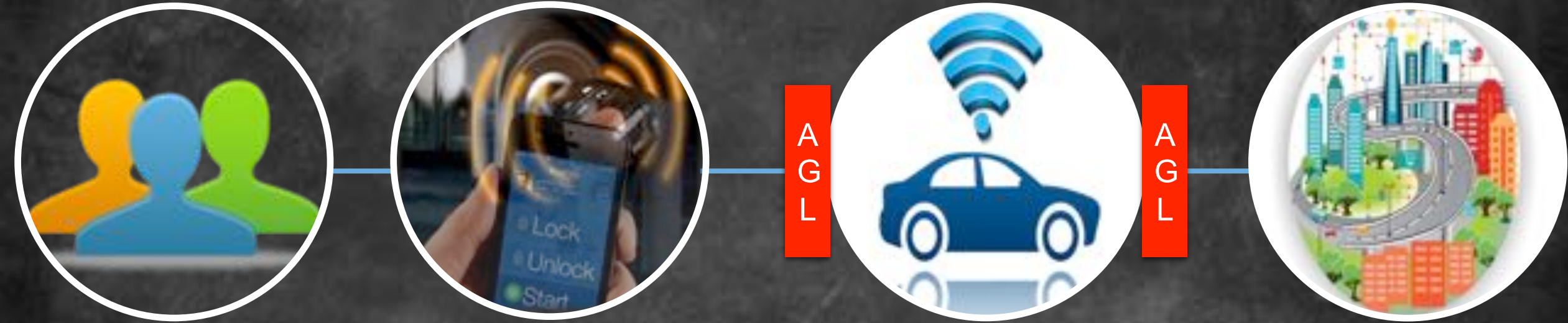
- User and role is known to the vehicle during operations
- User controls which data leaves the vehicle with UMA (all apps)
  - AGL Infotainment as in-car UI, or specify via web/mobile app
  - Anonymous or Attributable on a per-app basis
  - Insurance, Maintenance, Infotainment, Apps, etc.
- Inbound connections to the car are authenticated & authorized
  - Federated login from multiple Identity Providers
  - Identity & Role passed down to lower-level AGL/CAN systems
  - Connection between Internet and intra-car identity/credentials

# Identify & Authenticate User -> Car



Use an AGL Binding to authenticate user from a digital key, such as a smart phone app, which connects to Vehicle/AGL via wireless protocol, i.e. BTLE or NFC

# Identify & Authenticate User + Car -> X

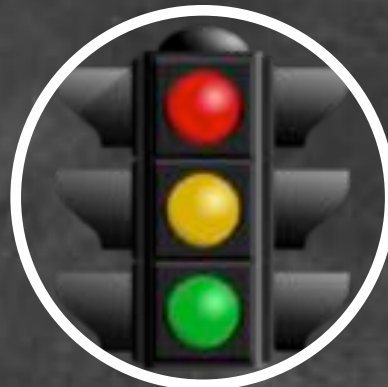


Use an AGL Bindings to securely communicate authenticated user and car identities and data to smart cities, smart parking, smart homes, etc.

# Summary



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G  
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# Thank You

