

*Intergetic Forum*

## **The Challenge Of Data In The Smart Home:**

Laying The Standards Groundwork

**Stephen Wood**  
Executive Director

May 4, 2017

**“Personal Data Is The New  
Oil Of The Internet And The  
New Currency Of The Digital  
World”**

2009 EU Commissioner



## **Why Is Consumer Data The New Oil?**

### **Consumer spending as a percentage of GDP**

<b>US</b>	<b>68.1%</b>
<b>UK</b>	<b>65.1%</b>
<b>France</b>	<b>55.1%</b>
<b>Germany</b>	<b>53.9%</b>

**Retailers, politicians, auto manufacturers and almost every industry needs to influence or respond to consumer sentiment.  
IoT in the smart home provides the data they need.**

## **Just Like Oil, Consumer Data Collection Has Both A Positive & A Negative Side**

**Enormous  
Utility**



**Incredibly  
Invasive**

# The Success Or Failure Of Consumer Data Will Be Determined In The Smart Home



Cameras



Microphones

**Shared Networks Of Microphones, Cameras & Sensors Used By Whole Home Personal Assistants Will Bring It To A Head**



# Where Is The Smart Home Technology Going?



## Today's Personal Assistants Live Primarily On A Single Device



**Google Home**



**Siri**



**Alexa**

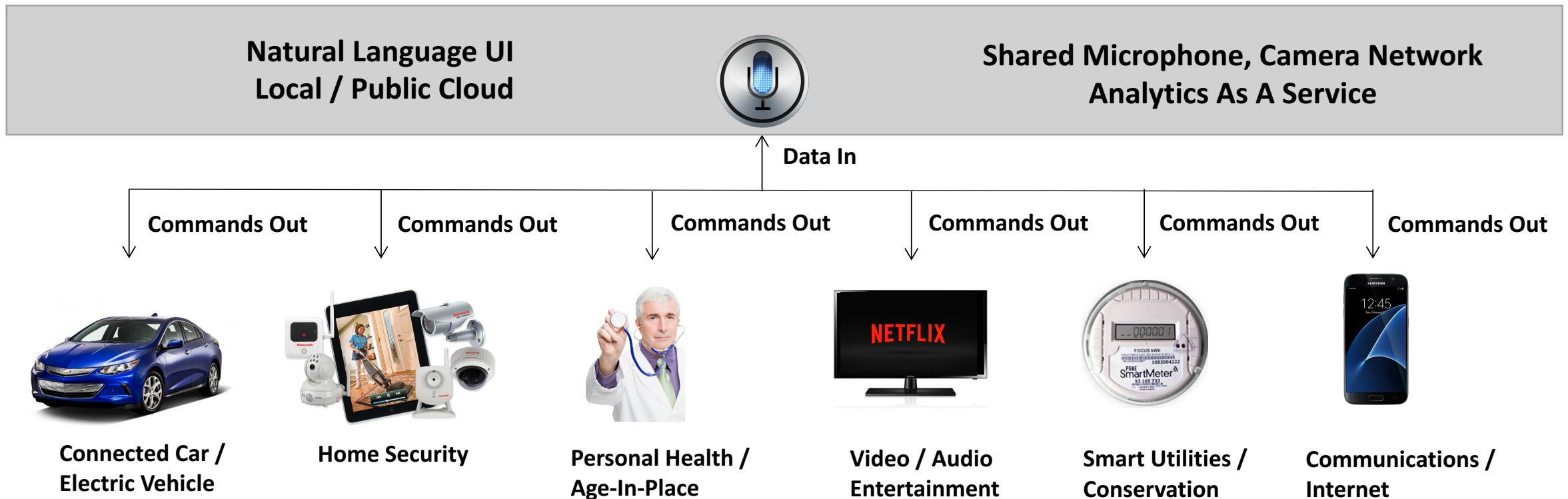
10,000 Skills



**Cortana**

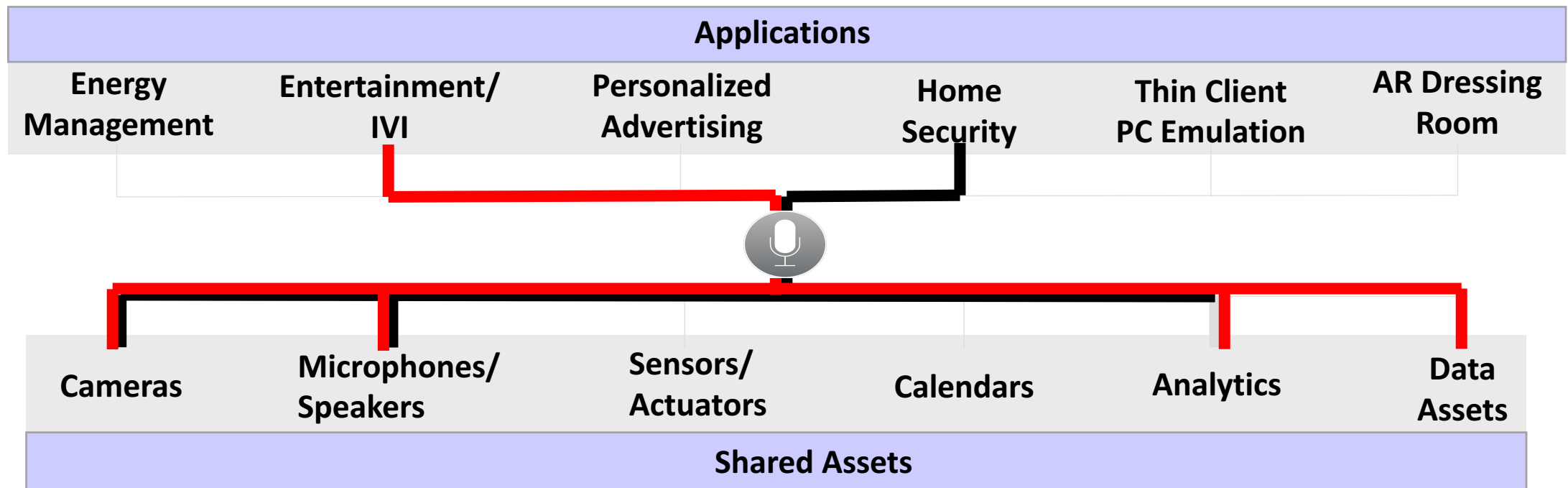
145M Users

## In 2-3 Years The Whole Home Personal Assistant Emerges As A Cross-Device / Cross Application Intelligence





## it's a Highly Shared Architecture



Many Applications Can Access Shared Microphones, Cameras, Sensors And Data



## What Is Creating The Urgency?

### Voice Search Replaces Search & Apps

**Voice search is 30x more likely  
To be action oriented.** Google

**Satya Nadella (Microsoft) Bots  
will be the new apps** Dailyo



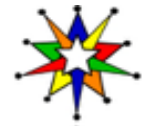
**Satya Nadella (Microsoft) believes that  
assistants will replace web browsers**  
Managed Solutions

**Virtual assistants will enable new  
Commerce platforms, replacing search  
Engines as we know them.** Beyond

**Amazon has >1000 employees assigned to Alexa products**

# The Missing Standards That Are Needed To Make Data A Force For Good






## Data Integrity

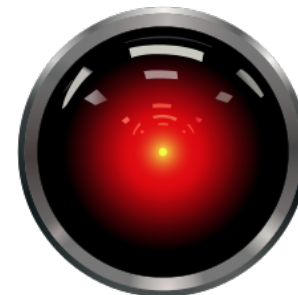
Bad data, fed into personal assistants results in bad recommendations. Who is liable?

*If it's not  
accurate, it  
might as well  
not exist.*



## Data Privacy

Your app behaves nicely,  
but will other apps poison  
the well for you?



## NIH Study Of Sleep Trackers

- 5 of 6 provided no data on sensor accuracy
- 4 of 6 provided no data on output accuracy
- Accuracy found to be quite low in peer review



Data In



Analysis



Recommendations



# **Establish A Common Agreement About Data That Can Be Traded**

## **Standardization**

What data is being collected?  
What is the proper way to collect?  
How accurate must it be?  
How can it be used?  
What handling limitations ?

## **Traceability**

Data traceable to its source  
Non-compliant data is removed

## **Certification**

Competitors report non-compliance  
Independent testing to verify  
Certification registry

# A “Wake” Word Is Not A Viable Privacy Technique In All Cases

## Audio Analytics

Baby distress monitors, glass breakage monitors and other forms of audio analytics must remain on perpetually. There are existing examples of companies capturing more data than needed for the stated application

## Contextual Awareness

The accuracy of search can be enhanced by understanding the context behind a request. Competing vendors will be tempted to increase the scope of data they collect



## Visual Identification

Visual recognition is needed to tag consumption data to the specific consumer. These applications must run so long as consumption is anticipated.

## Visual Navigation

Home robotics such as Roomba can be enhanced with visual recognition to do obstacle avoidance (cats). These devices must have active cameras as long as they are mobile.



## More Sophisticated Privacy Mechanisms Are Possible

### Hierarchical Cloud

The processing structure is divided between public and local cloud. Some data streams are never allowed outside the home.

### Escrowed Processing

A certified application is permitted to operate on sensitive data. Only inert results may be exported to the application owner.

### Tokenization

For data sets that must move outside, an artificial identity replaces the PII. A central ID authority is the only group who can reverse the process.

# The Intergetic Forum

## A Better Way Forward





## **We Take Responsibility For Three Areas For The Smart Home & Connected Car**

### **Data Integrity**

**We define standards for data collection methodologies in close cooperation with other SIGs. We develop compliance certification mechanisms.**

### **Data Privacy**

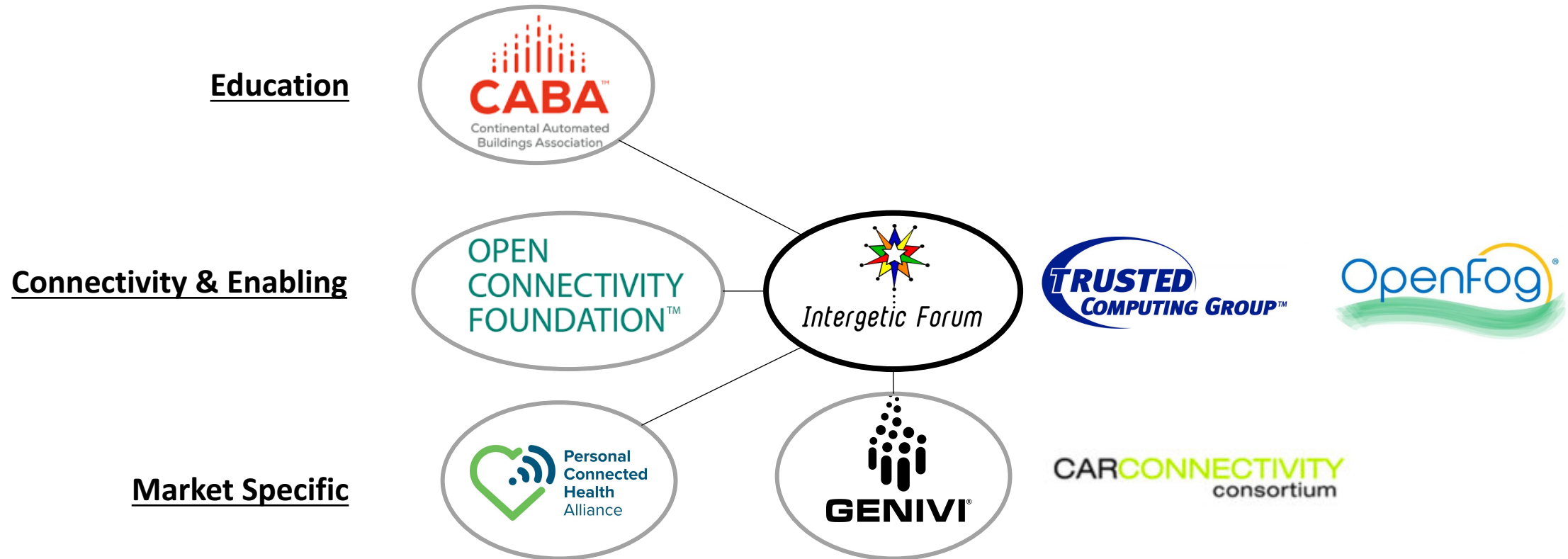
**We develop privacy mechanisms.  
We standardize techniques  
for applicable use cases**

### **Low Friction Trading**

**We develop and manage an  
ethical data trading ecosystem.**

**Our Objective Is To Provide A Horizontal Service To Support  
A Multi-Vendor Ecosystem**

# We Have Begun Establishing Liaison Relationships



**None Of Us Are In This Alone. Success Will Be A Team Effort.**