

Intergetic Forum

The Challenge Of Data In The Smart Home:

Laying The Standards Groundwork

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

2009 EU Commissioner

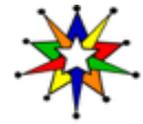


Why Is Consumer Data The New Oil?

Consumer spending as a percentage of GDP

US	68.1%
UK	65.1%
France	55.1%
Germany	53.9%

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.



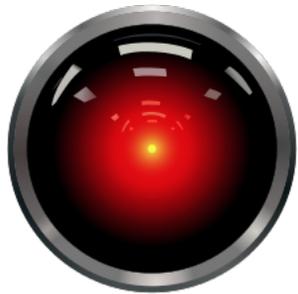
Just Like Oil, Consumer Data Collection Has Both A Positive & A Negative Side

**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

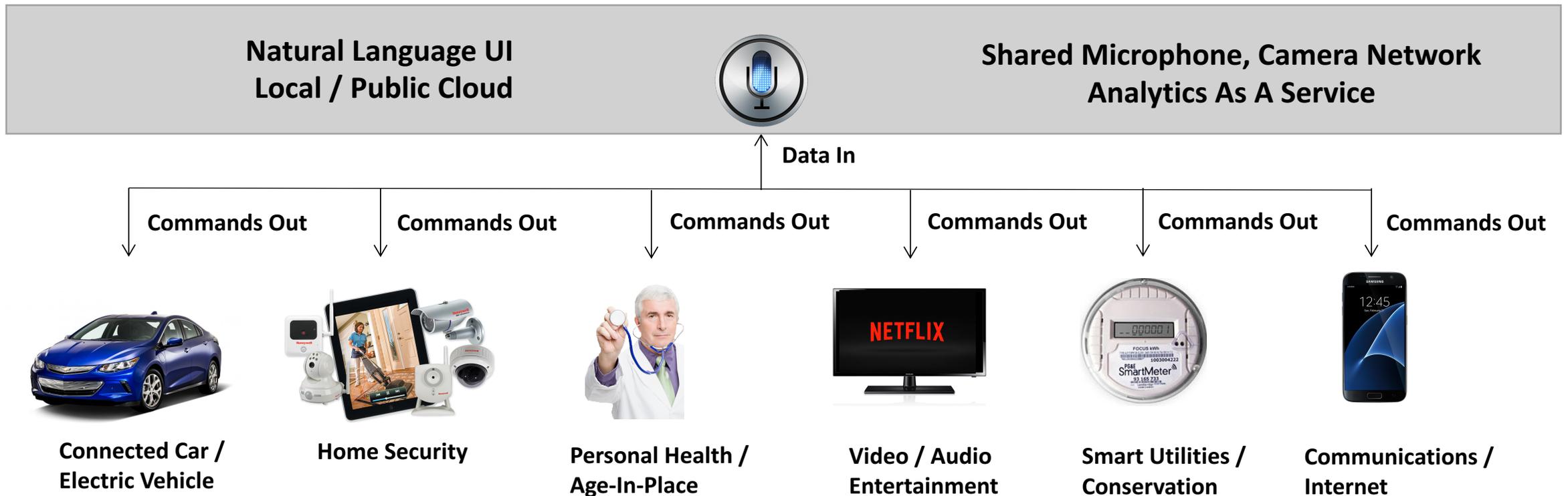
10,000 Skills



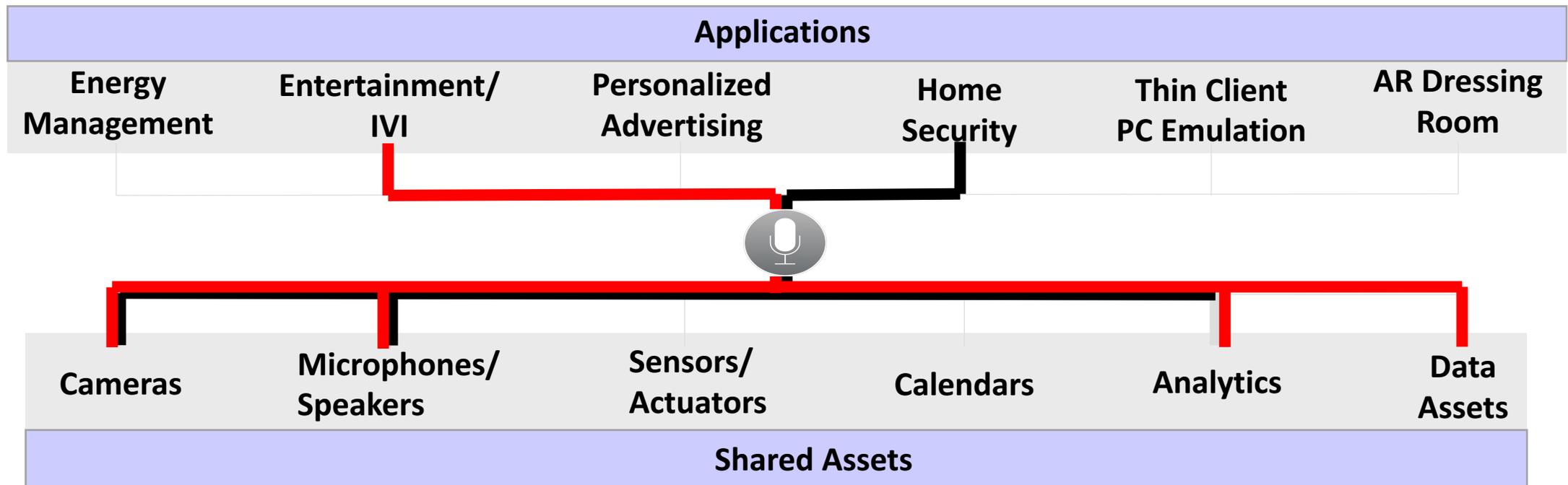
Cortana

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





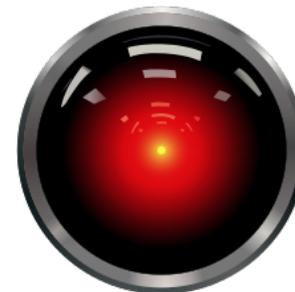
Data Integrity

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?

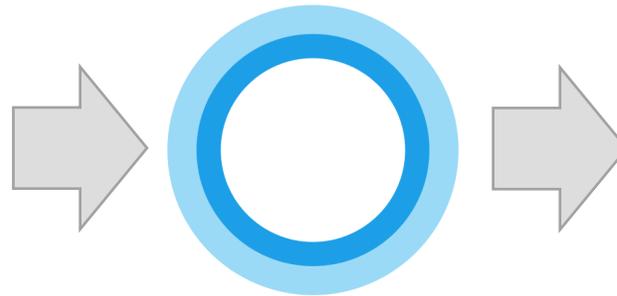


NIH Study Of Sleep Trackers

- 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

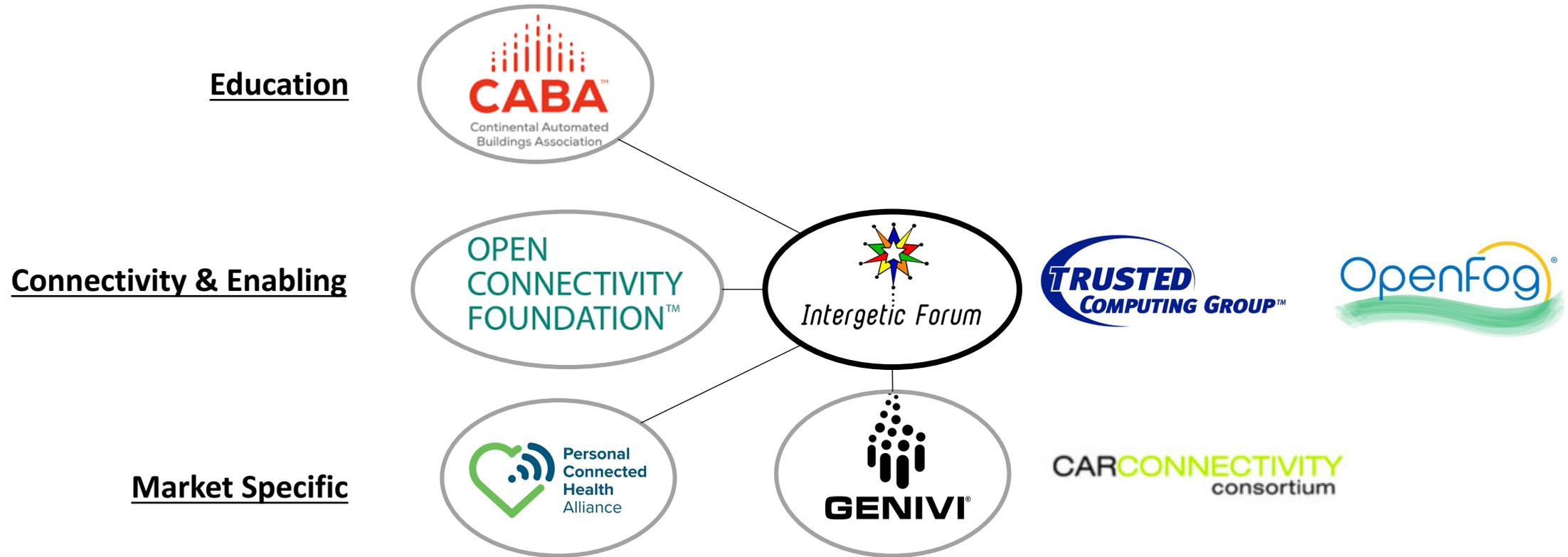
**We develop privacy mechanisms.
We standardize techniques
for applicable use cases**

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.