

A decorative graphic on the left side of the slide, consisting of a network of light blue lines and circles that resemble a circuit board or a data network. The lines are vertical and horizontal, with some diagonal connections, and the circles are small and spaced out along the lines.

PANEL ON WIRELESS AND UBIQUITOUS COMPUTING: CHALLENGES AND RECENT ADVANCES

MODERATOR: PROFESSOR TIMOTHY ARNDT, CLEVELAND STATE
UNIVERSITY, USA

The background is a teal-to-blue gradient. In the corners, there are decorative white circuit-like patterns consisting of lines and small circles, resembling a PCB layout.

RECENT HEADLINES

NXP automotive platform emphasizes security, wireless updates

Automotive chip supplier NXP announces its S32 compute architecture for cars, allowing for secure over-the-air updates and connectivity.



IDG CONTRIBUTOR NETWORK [Want to Join?](#)

FUELING THE IOT REVOLUTION

By Raj Talluri, Network World | OCT 24, 2017 4:00 AM PT

Opinions expressed by ICN authors are their own.

OPINION

Why edge computing is critical for the IoT

Everyday devices are becoming more powerful, reducing data center loads and complementing—or in some cases leapfrogging—cloud capabilities to drive exciting new IoT applications.



To Secure the Internet of Things, We Must Build It Out of “Patchable” Hardware

The flexibility of FPGAs will protect the world
network of smart devices

Posted 23 Oct 2017 | 15:00 GMT

By SANDIP RAY, ABHISHEK BASAK AND SWARUP BHUNIA

Connectivity

OK Google, Get Out of My Face

Ubiquitous computing is starting to get (really) real and I'm kind of afraid of it.

by Rachel Metz October 4, 2017

T

oday I got a glimpse of the future. It's overwhelming. And it's amazing. But it's also very scary.

TECH

THE DAILY CALLER
NEWS FOUNDATION



The Race To 5G Technology: How America Could Lose Out On The Next Biggest Thing



ERIC LIEBERMAN
Tech and Law Reporter

10:02 AM 11/04/2017

MarketWatch    



NEWS VIEWER

MARKETS

INVESTING

PERSONAL FINANCE

RETIREMENT

ECONOMY

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Global Edge Computing Market Benefits From Proliferation of Internet of Things - Transparency Market Research

Published: Oct 26, 2017 11:31 a.m. ET



Aa 

ALBANY, New York, Oct 26, 2017 (PR Newswire Europe via COMTEX) -- ALBANY, New York, October 26, 2017 /PRNewswire/ --

PANELISTS

- André Constantino da Silva, Instituto Federal de Educação, Ciência e Tecnologia de São Paulo (IFSP), Brazil
- Sangkuk Kim, Korea Institute of Science and Technology Information, Korea
- Petre Dini, IARIA, USA
- Richard Li, Yingzhen Qu, Kiran Makhijani, Huawei Technologies, R&D, USA
(position presented by Petre Dini)

FORMAT

- 5-7 minute introduction of a topic by the panelists
- Discussion, Q/A
- Your participation!

BRINGING TOGETHER UBIQUITY, INTERACTION STYLES, AND E-LEARNING ENVIRONMENTS: TRENDS AND CHALLENGES

Ph.D. André Constantino da Silva

Federal Institute of São Paulo – Câmpus Hortolândia



**Research Group in Mobility and
New Interaction Technologies**



OVERVIEW: E-LEARNING ENVIRONMENTS

- E-Learning Environments Systems are applications that use the Web infrastructure to support teaching and learning activities
 - Tools for create/visualize content, share digital files, communicate with other users and manage the virtual space

- Requirements:
 - Functionality
 - Usability
 - Accessibility
 - ...



- The first generation of e-Learning environments is from the 90's
 - evolved over the last three decades due to technological advances

HUMAN-COMPUTER INTERACTION

- Usability (ISO 9241-11): the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a **specified context of use**
- New equipment and user interaction software have emerged
 - Kugler (2008) describes that one of the major challenges for Information and Communication Technology in the next 25 years is the natural and non-tactile interfaces and automatic speech recognition
 - Hayes (2008) describes a tendency to gradually switch the mouse over emerging alternative interfaces that work with facial recognition, movement and gestures
- We believe that these emerging alternative interfaces can benefit the learning



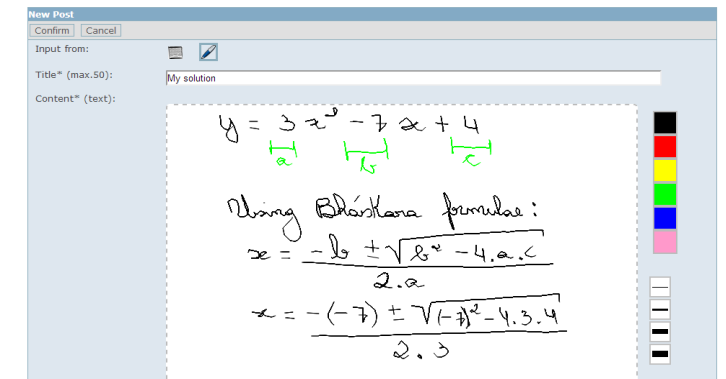
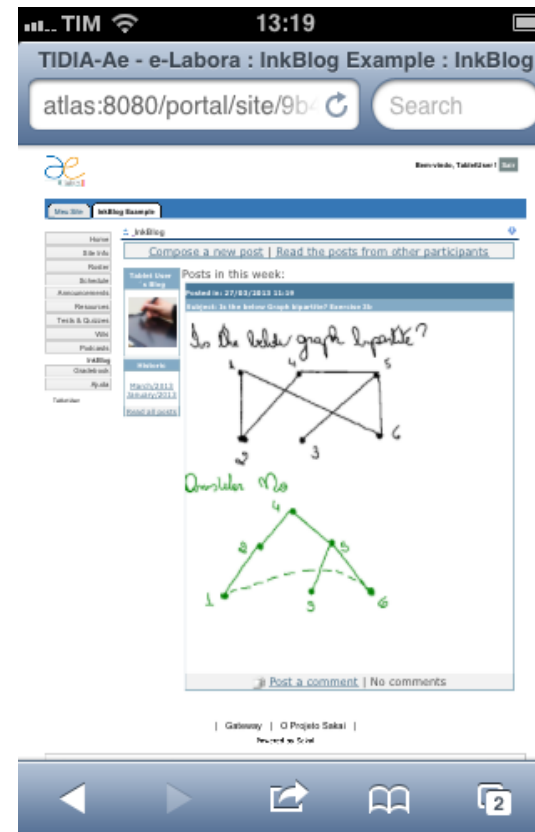
PEN COMPUTING

- **Pen computing** refers to any computer user-interface using a pen (or stylus) and tablet, rather than using devices such as a keyboards, joysticks or a mouse
 - The user needs to type each letter using a virtual keyboard, so the efficiency decreases and makes the writing task boring
 - Pen is great to draw sketches (using the mouse is very difficult)
- Bernsen (2008) claims that two modalities are not equivalent because they differ in relation to strengths and weaknesses of expressiveness and also in relation to the perceptual, cognitive and emotional systems of the human being
- Hamilton et al. (2012) describe that the modes of interaction based on pen, multitouch, and mouse + keyboard are fundamentally different.



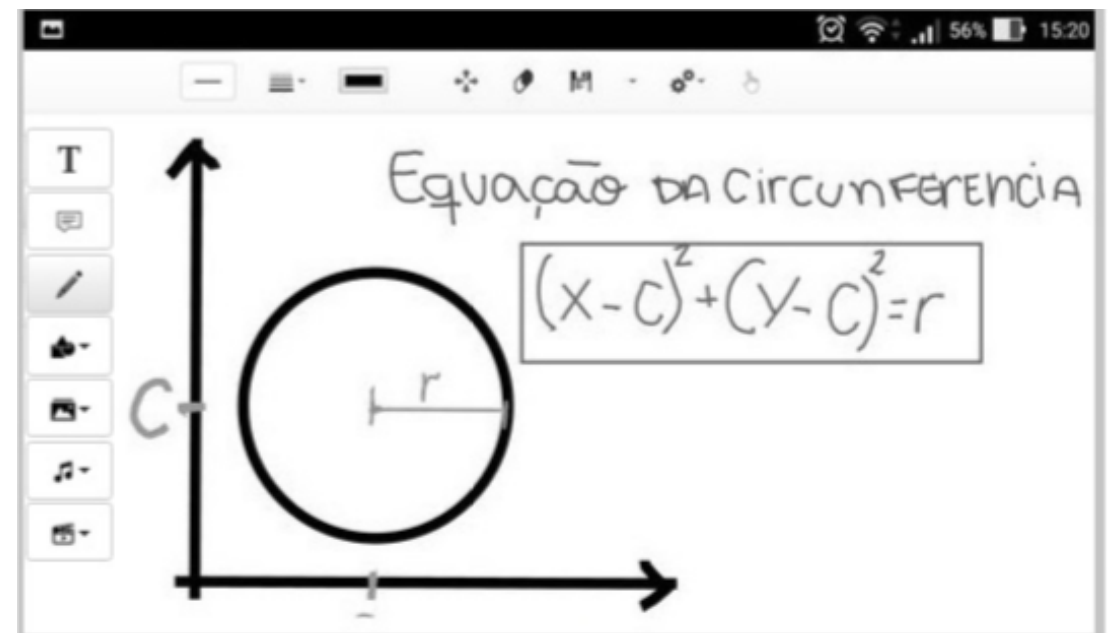
INKBLOG

- InkBlog (da Silva e Rocha, 2013) is a Weblog that allow handwrite posts and comments in a blog using a stylus in pen-based devices



MULTIMODAL EDITOR

- MultiModal Editor (Arantes *et al.*, 2017) is a tool for producing multisemiotic texts: texts composed of different forms of representation - images, audios and videos, besides written and spoken language



You can try: <http://fenix.nied.unicamp.br/EdiMM/>



EDUCATION

- Active Learning
 - A method of learning in which students are actively or experientially involved in the learning process and where there are different levels of active learning, depending on student involvement (Bonwell & Eison, 1991)
 - Engaged, Situation-driven, Reflective, Purposive, ...
- Learning Analytics
 - is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs (LAK, 2011)

EMERGING TECHNOLOGIES

Virtual reality

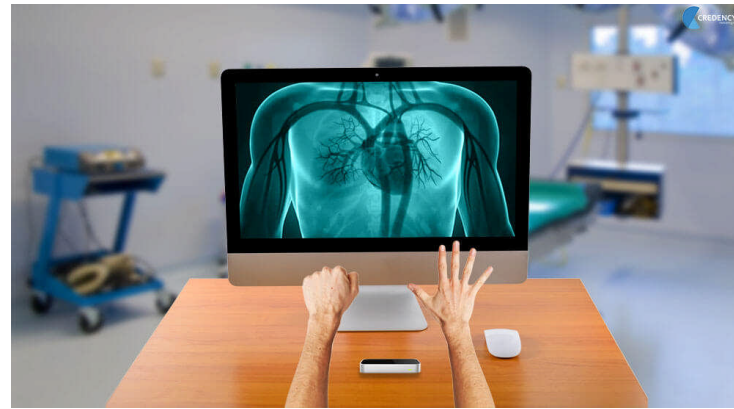


Ubiquity



<http://ubiquity.acm.org/>

Gesture interaction



<http://www.credencys.com>

Augmented reality



<http://www.augmentedrealitytrends.com>

...

CHALLENGES

- How to get the benefits of the emerging technology and data that they can delivery

easily customizable by teachers who do not have programming skills



to create meaningful, interesting and surprising experiences related to content



EMERGING 2017

A Study on the Customer Satisfaction Strategies of information Service Using VOC

- A case study in KISTI -

**Sangkuk Kim, Yongho Lee/Korea Institute of Science & Technology Information
Yeahwon Lee^o, Yoon Yim / Research Lab**

*** This research was supported by Korea Institute of Science and Technology Information(KISTI)**

Backgrounds

- Public-service Customer Satisfaction Index(PCSI) has been applied to public sector in Korea since 2007(C. Lee and Y Yi)
- While KISTI has taken its customer satisfaction survey every year, it plans various CS activities and strategies.
- Korea Institute of Science & Technology Information(KISTI) carries out its customer satisfaction survey every year and plans various Customer Satisfaction(CS) activities and strategies.
- Despite endeavoring to improve Customer Satisfaction Index(CSI), it has not been changed since 2010.
- From 2012 to 2014, we have piloted Net Promoter Score(NPS) with Voice of Customer(VOC) surveys on some services. It has been applied to the entire services since 2015.

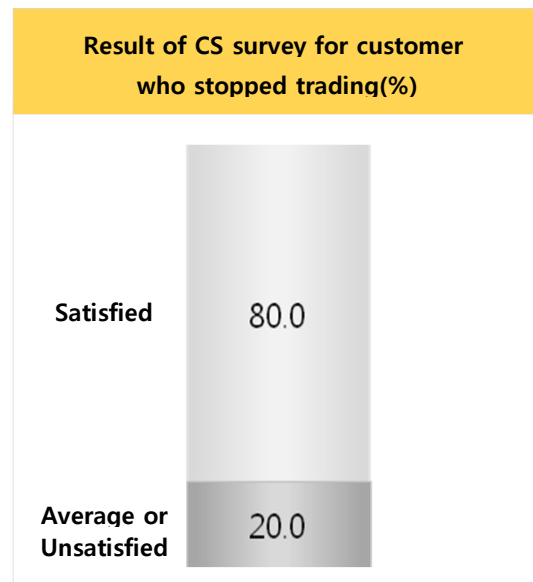
Year	2009	2010	2011	2012	2013	2014	2015	2016
CSI	79.5	87.2	87.2	87.1	87.7	87.1	89.3	90.0

What is NPS?

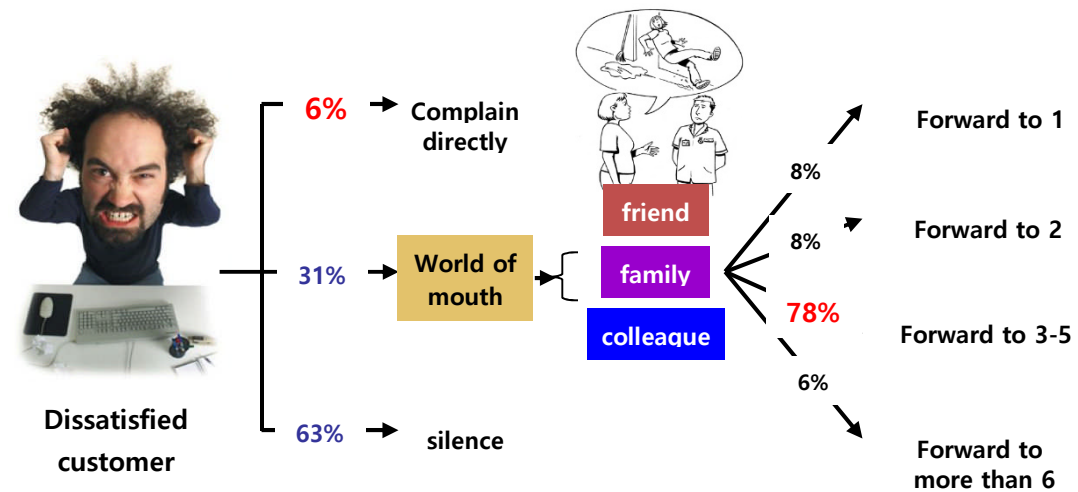
NPS is an index introduced and developed by Fred Reichheld, Bain & Company, a global consulting firm.

Many companies have measured satisfaction primarily to predict sales. However, there has been a lot of empirical evidence that high satisfaction in purchasing does not lead to high sales (F. Reichheld, 2003).

NPS asks the intention to recommend. The research of Wharton School (2006) and Kumar et al (2007) shows that recommendation is very likely to predicting actual behavior.



Frederic F. Reichheld's "The One Number You Need to Grow" 2003



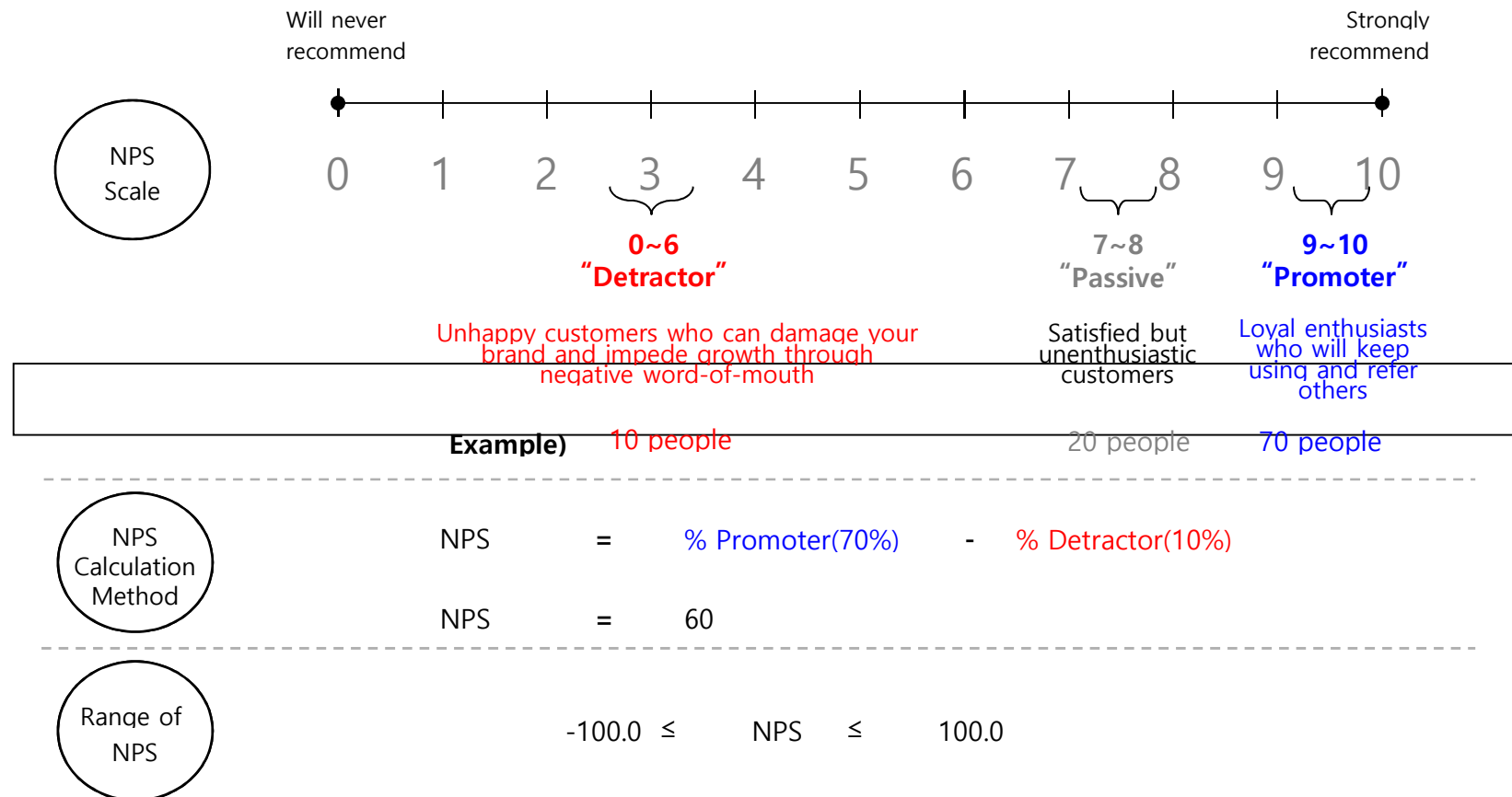
the Verde Group • Wharton School of Business "Retail Customer Dissatisfaction Study" 2006

	Showed recommend intention	Recommend actually
Financial service	68%	33%
Communication service	81%	30%

Kumar et al "How Valuable Is Word of Mouth" 2007

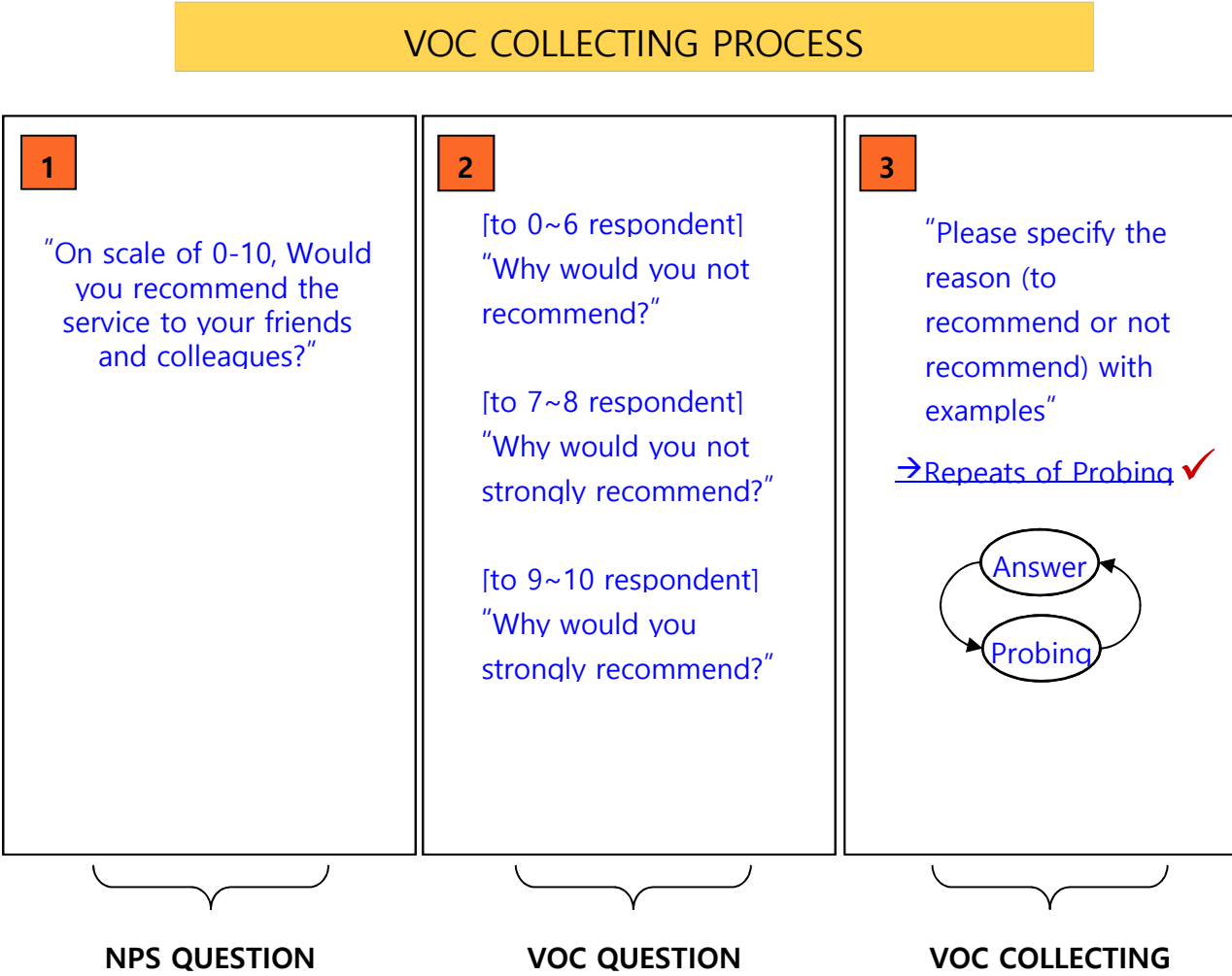
Method

NPS QUESTION : On scale of 0-10, would you recommend the service to your friends or colleagues?



How to collect Voice of Customer

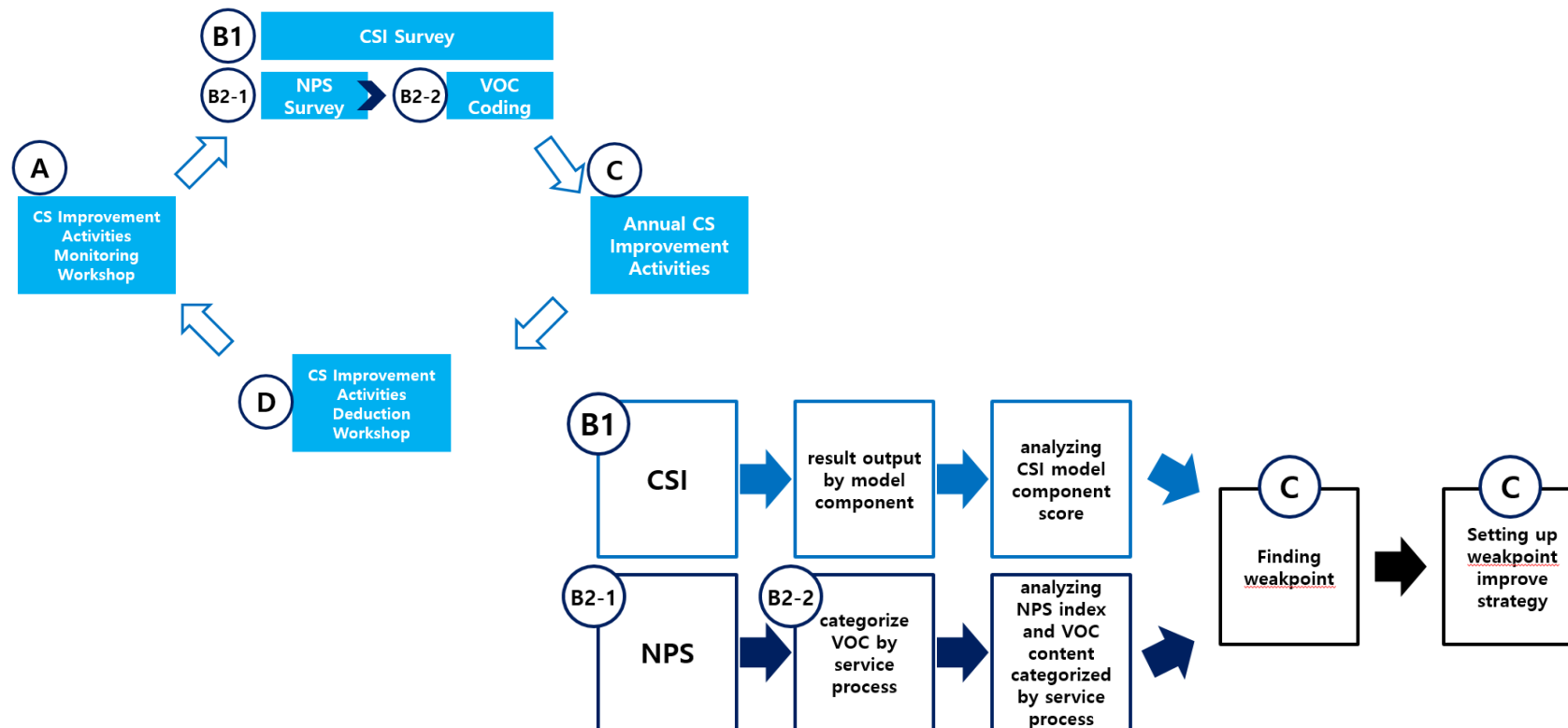
We collected VOC(Voice of Customer) by giving different questions according to NPS response.



Applying NPS

NPS was applied to KISTI's customer satisfaction strategy system.

The most significant change is that not only the investigator but also the manager of each KISTI service participate in the meeting for coding the VOC collected in the NPS survey.



Conclusion

The effects of applying the NPS to the customer satisfaction management system are as follows:

- 1) Enhance service manager's awareness of customer feedback.
- 2) Customer opinion is matched with actual service process, and it is easy to develop CS improvement points
- 3) Achieved 90.0 points in government satisfaction evaluation

Petre Dini - Panelist

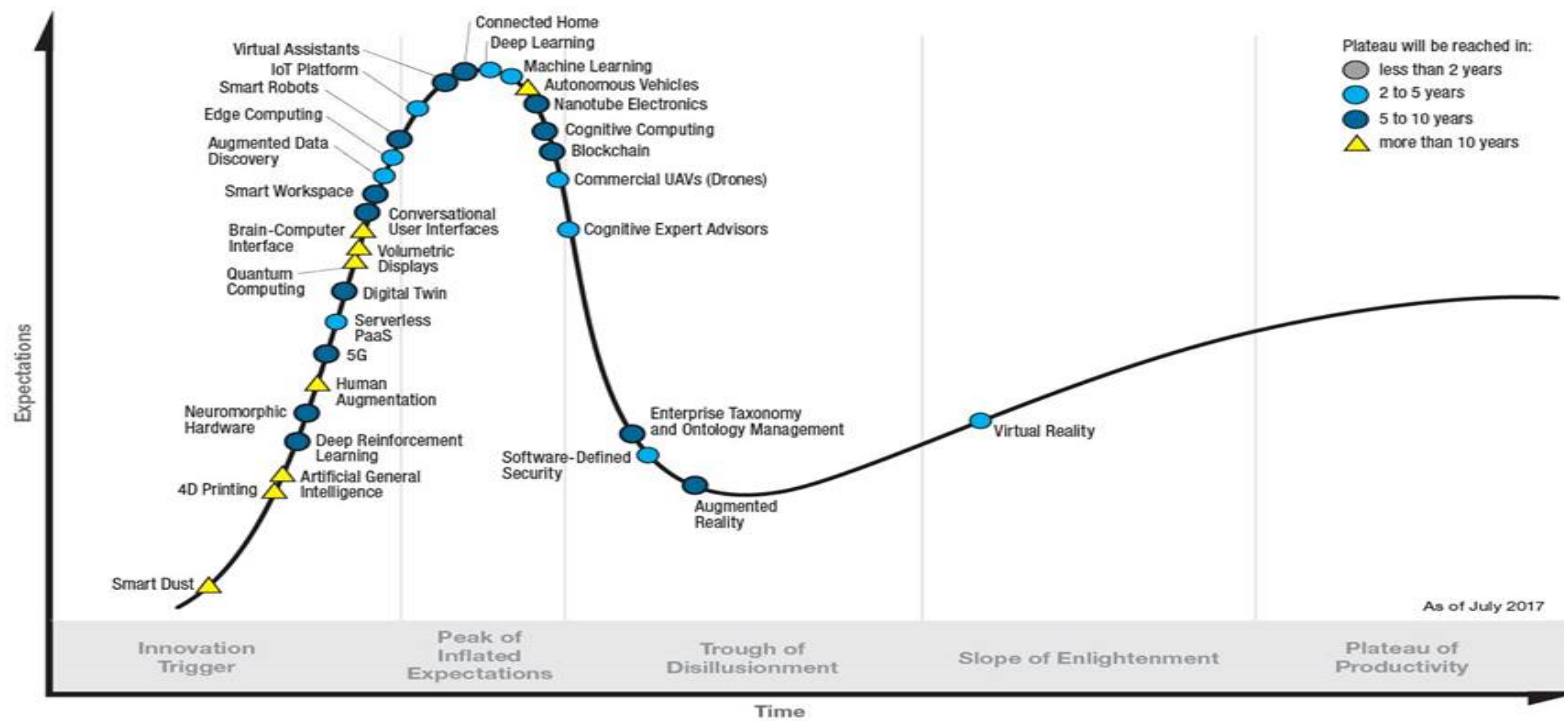
Wireless, Smart Cities, Industry 4.0, Internet

→ Achievements

Petre Dini, IARIA, USA

GARTNER 2017

Gartner Hype Cycle for Emerging Technologies, 2017



gartner.com/SmarterWithGartner

Source: Gartner (July 2017)
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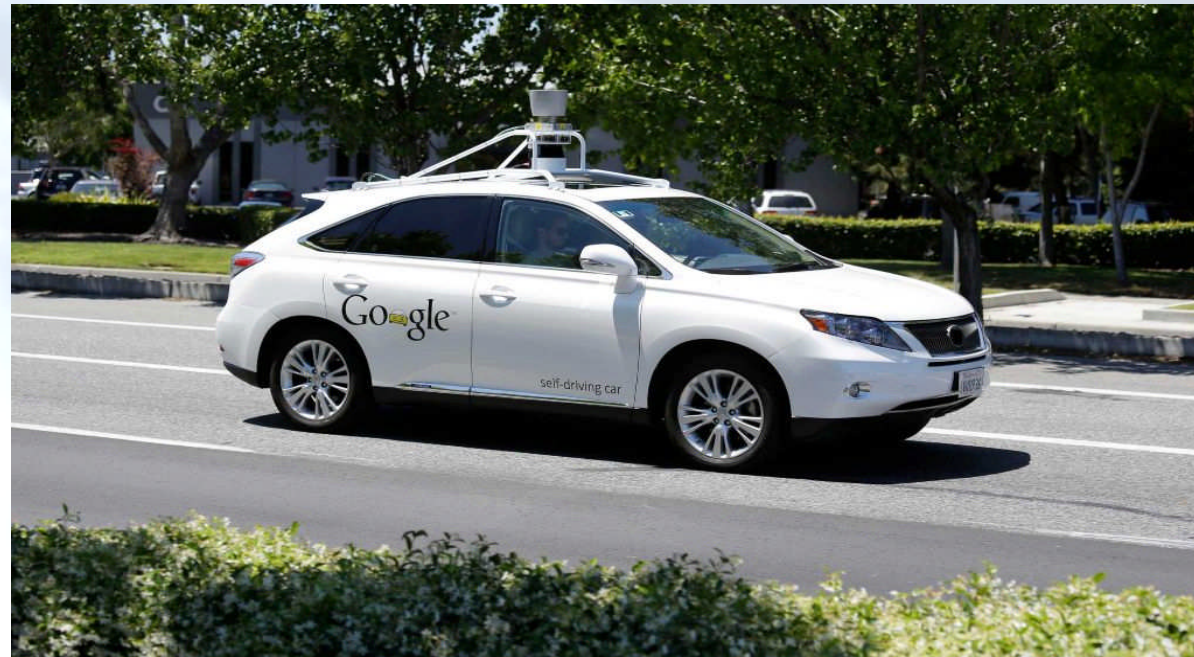
Gartner

Smart Cities

- **Wireless (5G, mmWave, picocells...)**
- **Urban computing**
- **Intelligent transportation**
- **Driverless cars**
- **Drones (services)**
- **Elders (services)**
- **Wireless metering**

Self-driving | *Legal aspects*

- **Driverless car journey starts in Las Vegas**
- **Published 7:59 pm, Friday, May 30, 2014**
- <http://www.timesunion.com/business/article/Driverless-car-journey-starts-in-Las-Vegas-5517869.php#photo-6379150>
- **The Nevada Legislature and the Department of Motor Vehicles** have enacted legislation and regulations to enable the testing and operation of autonomous vehicles in the Silver State. Currently, the **DMV is accepting applications for testing only**. Autonomous vehicles are not available to the general public.
- <http://www.dmvnv.com/autonomous.htm>



Self-driving III | Drones + IoE

- **CES 2016: drones, driverless cars and smart brewers**
- <http://www.telegraph.co.uk/technology/ces/12081995/CES-2016-drones-driverless-cars-and-smart-brewers.html>
- Beyond the **Internet of Everything**, drones took centre-stage. The Telegraph's picks of drones on the showfloor include winner of the CES 2016 Innovation Award, **Lily Robotics** which makes a "throw-and-shoot camera" – a 2.8 pound camera drone (\$799, shipping begins in February 2016), which follows the user via a tracking device.



“Chinese drone giant **DJI** showcased its new Phantom 3 4K – its first-ever sub-\$1000 drone with a 4K camera and WiFi transmission upto 1.2km. And finally, popular drone-maker **Parrot** showed its giant Disco Drone – a 50-miles-per hour sleek fixed-wing aircraft with a 1080p camera onboard, weighing just 700 grams. When the show opens officially on Wednesday, there will be an Unmanned Systems marketplace, with 26 different exhibitors.”

Industry 4.0

- **Robots >>> Manufacturing agents**
- **IoT**
- **3D printing**
- **? Wireless**
- **? Safety**

HUAWEI – Big IP Initiative

Launched and Driven by

Richard Li renwei.li@huawei.com

Yingzhen Qu yingzhen.qu@huawei.com

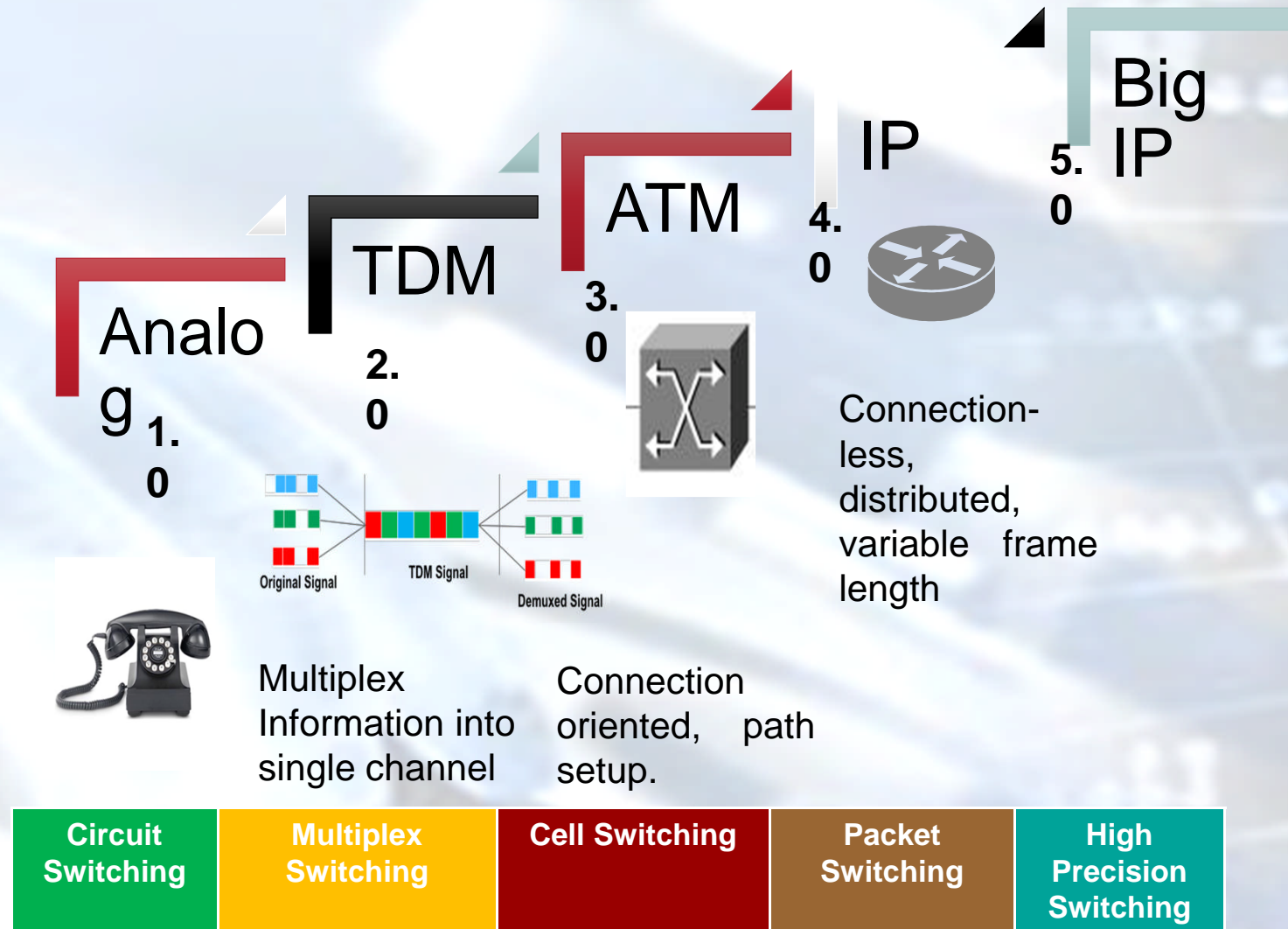
Kiran Makhijani Kiran.Makhijani@huawei.com

Presented by Petre Dini, petre@iaria.org

Barcelona, Nov. 12-14, 2017

UBICOMM 2017 / NexTech 2018

The Evolution of Internetworking Technologies



New Goals for Future Networks

Service
Guided
Switching
End User

Experience Centric

- Faster
- High Definition
- Immersive
- User-Definable

Seamlessly Mobile

- Session Continuity
- Multi-access
- Resource Efficiency

Intrinsically Secure

- ID anonymity and authentication
- Elastic Defense
- Perimeter
- Smart Breach Detection

Network

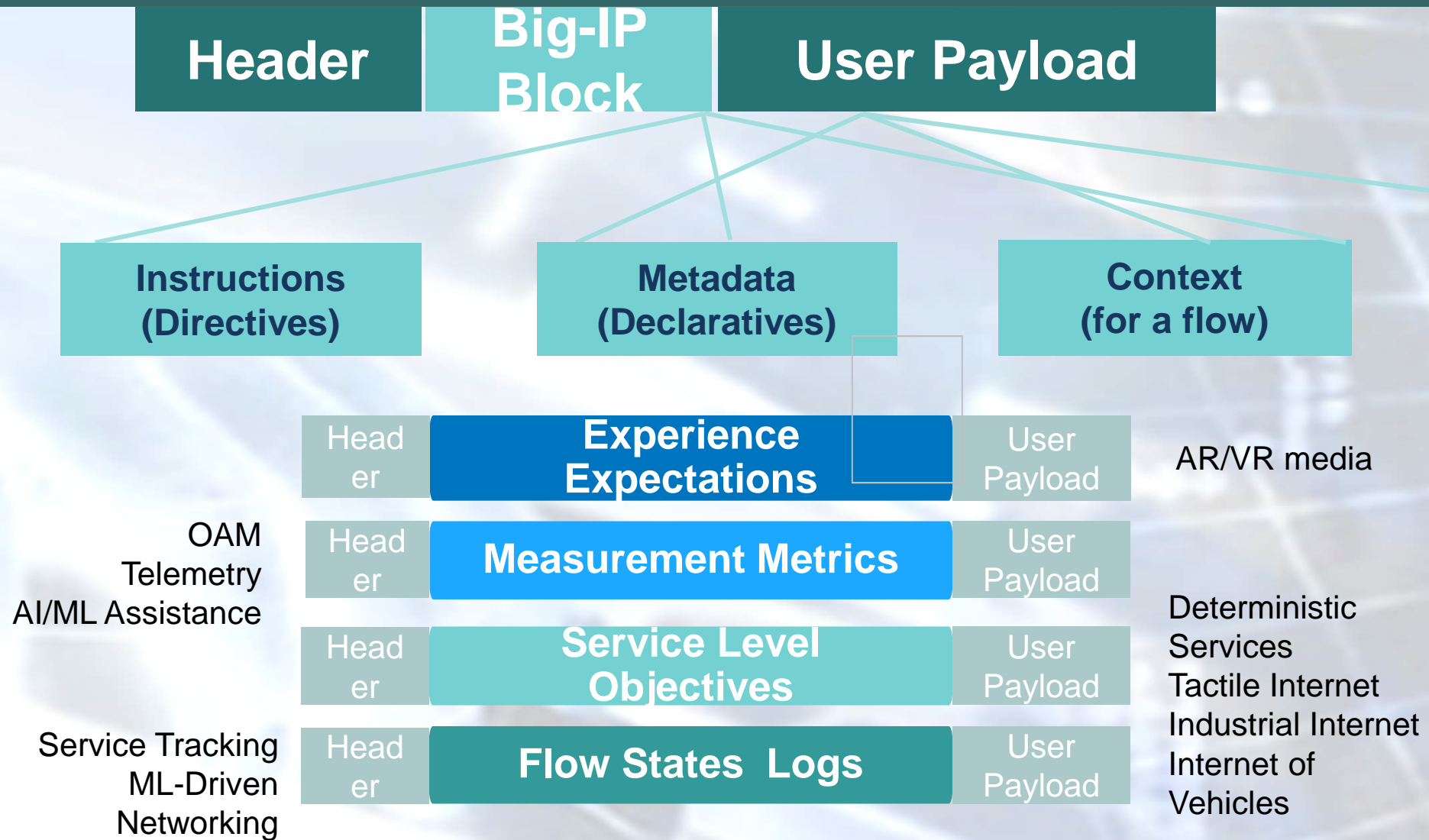
Infrastructure

User Network Interaction

Service Guided

High Precision

Big IP: Go Beyond IP for Future Applications



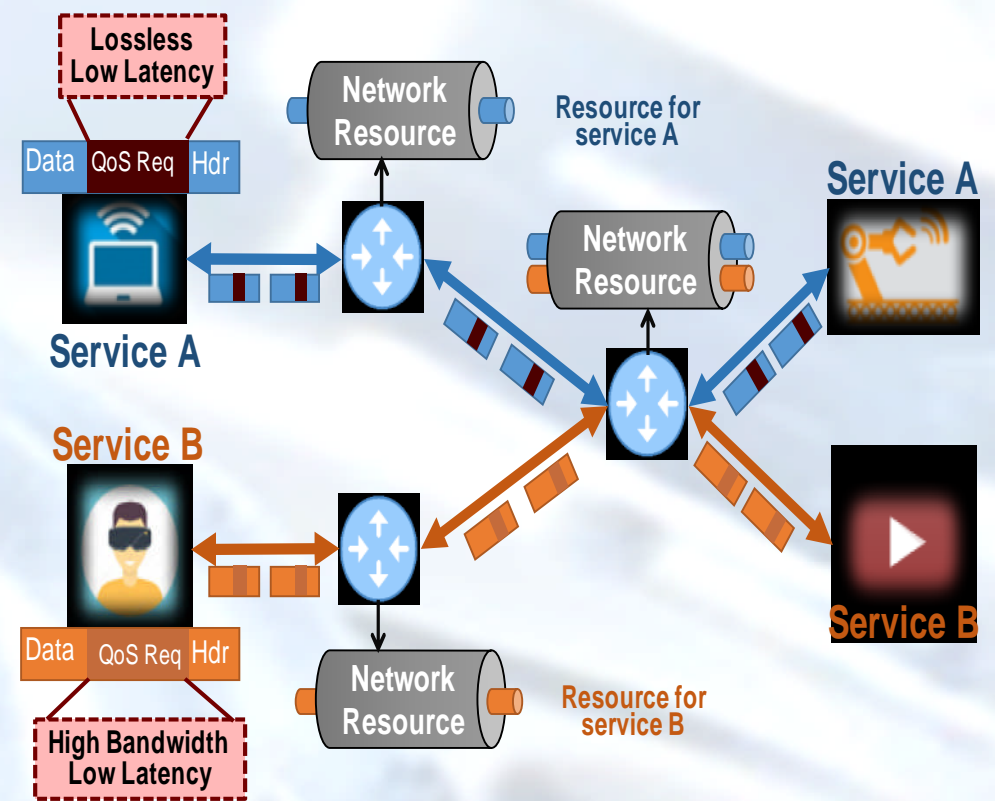
Relevance of Big IP in the Industry

Guaranteed High Throughput
Guaranteed Low Latency
 Dynamic resource reservation and differential treatment between higher priority data with normal of service specification.

Tactile Internet

Deterministic Latency
 Fill a gap between IP and TSN

Industrial internet



Intelligent Forwarding
 Allow customers to select different connectivity grades and treat packets so end to end.
Service Customization
 Allow customers to customize and make network responsive

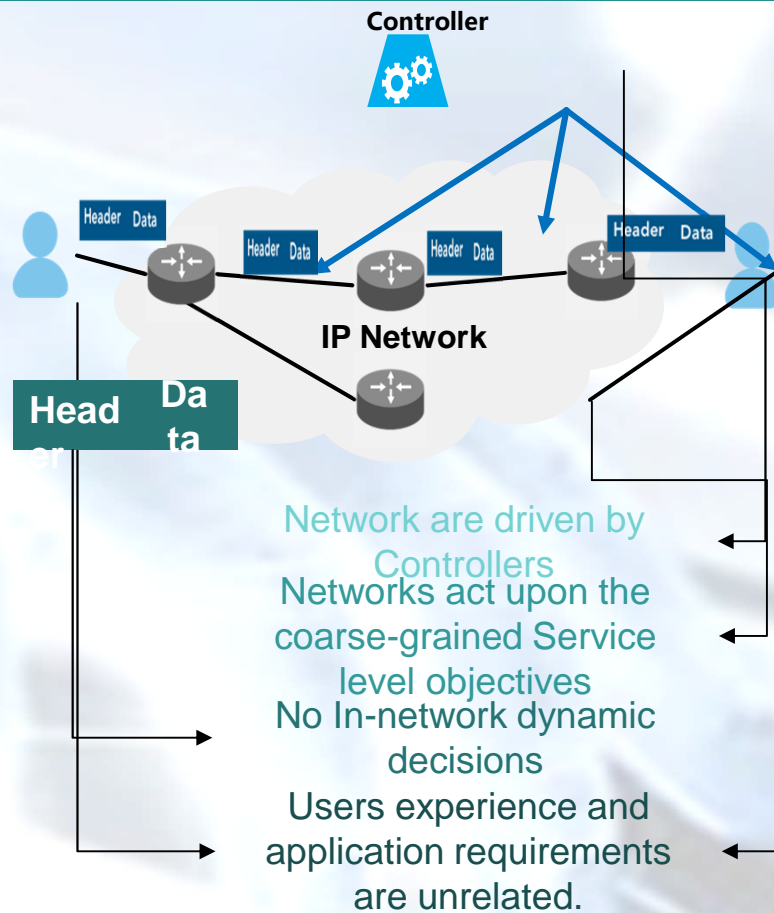
Smart Pipes

Resource Reservations
 Simpler in-band resource reservation.

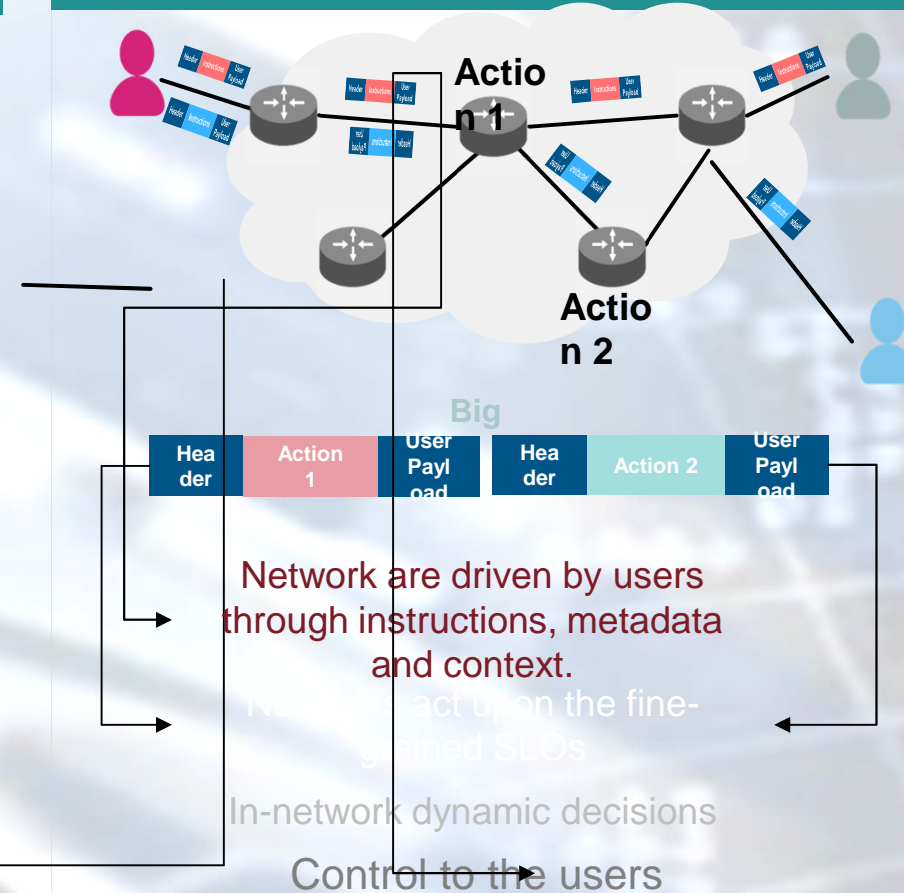
In band Signaling

User-Network Interactions with Big IP

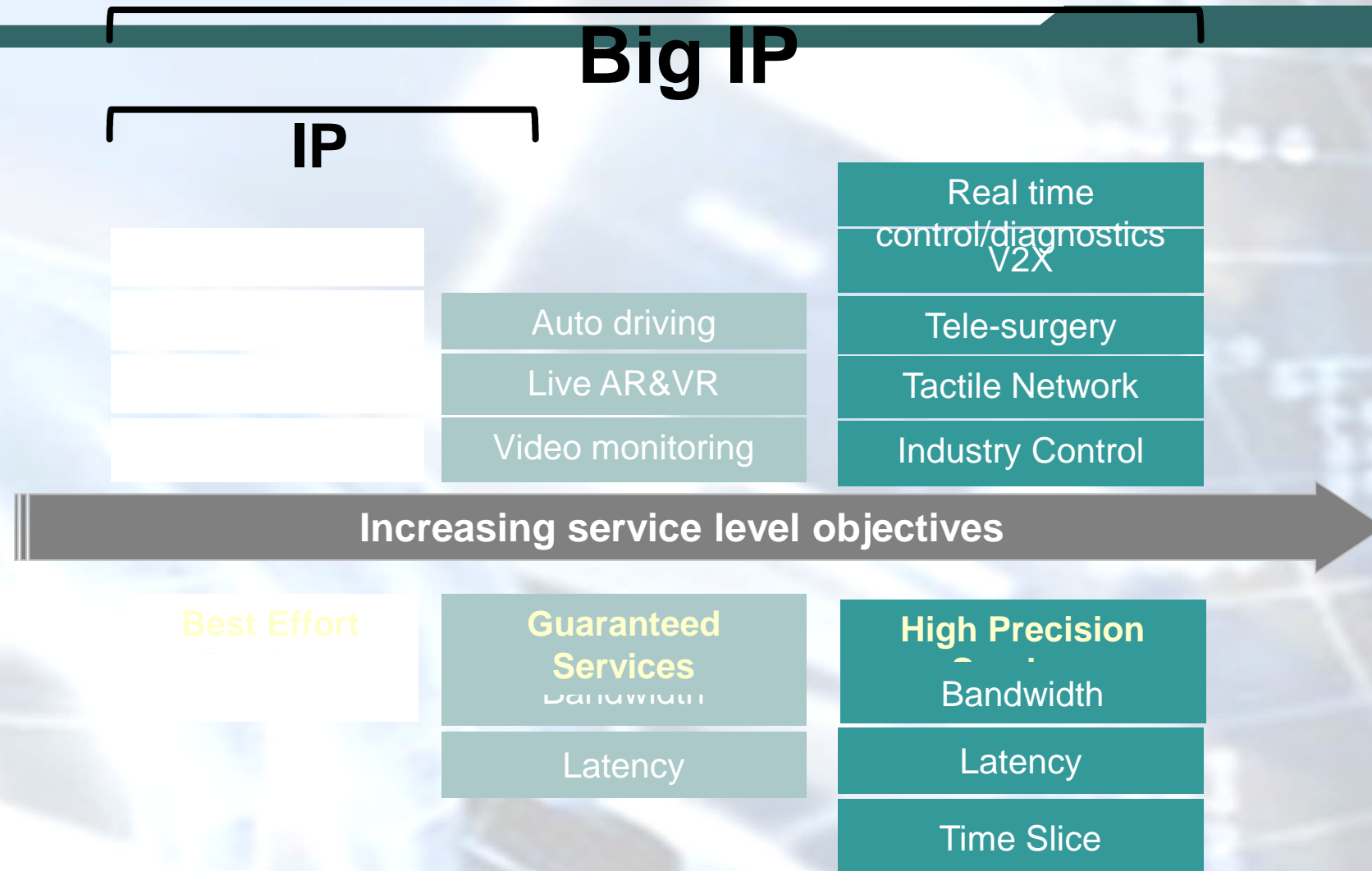
Traditional No User to Network interaction



User Programmable Big IP block Interacts with Networks



Service Delivery Evolution



Thanks

Thanks



WWW.IARIA.ORG