May 12–14, 2015 | JW Marriott Marquis Miami • Miami, Florida

WebRTC
CONFERENCE & EXPO

Redefining Web & Mobile Communications

Business Intro to WebRTC

Phil Edholm

President and Principal

PKE Consulting LLC

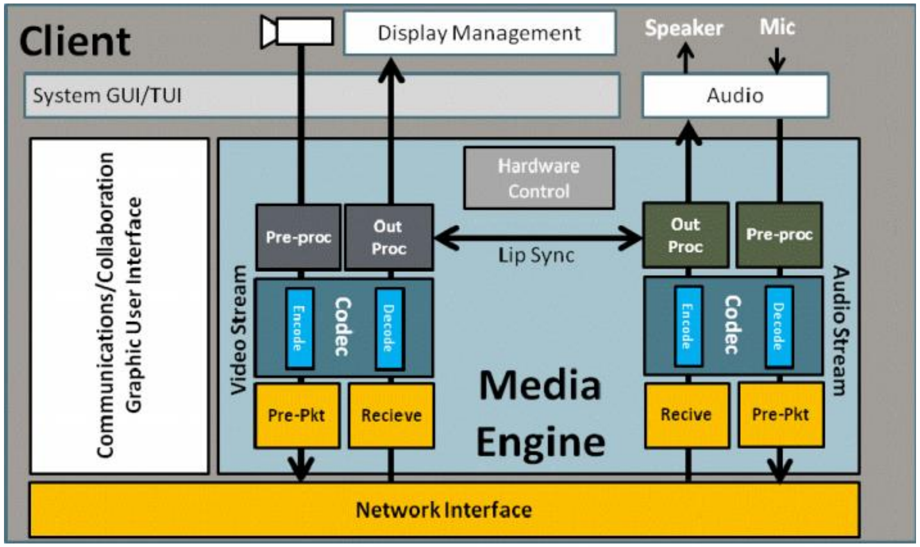
Speakers

- Phil Edholm
  - PKE Cosnulting LLC
- Dean Bubley
  - Disruptive Analysis

Typical VoIP Client and Media Engine Components

- Audio
  - Setup and control the hardware
  - RTP, compression, encryption, statistics, etc.
  - Produce low-latency audio from microphone
  - Conceal loss, de-jitter and play audio from the network
  - Cancel echo, VAD, reduce noise, etc.
  - Manage codecs
- Video
  - Render video, capture camera input
  - Video processing (blue screen, gamma, etc.)
  - Conceal loss, de-jitter and play video from the network
  - Cancel echo, VAD, reduce noise, etc.
  - Manage codecs
  - Bandwidth Management

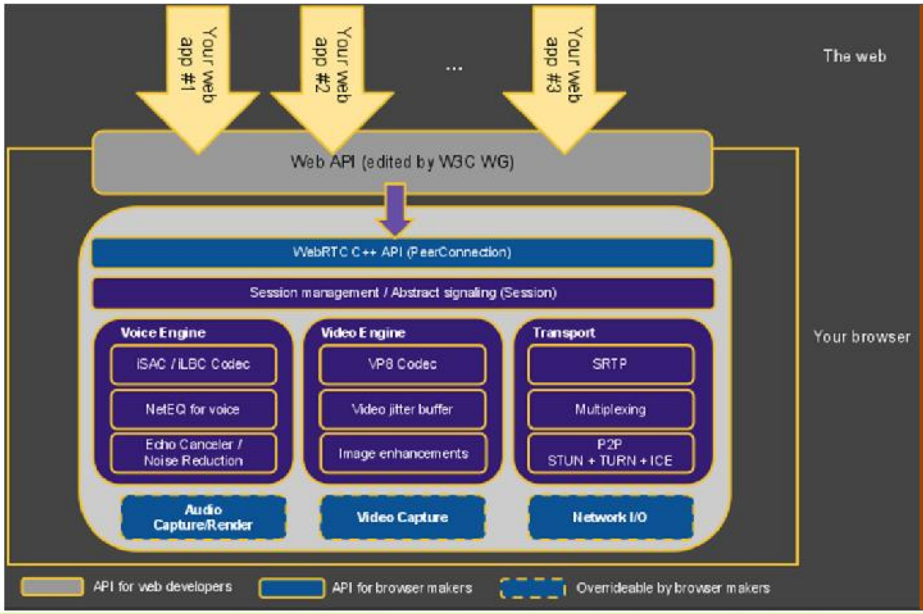
Client/Media Engine Structure

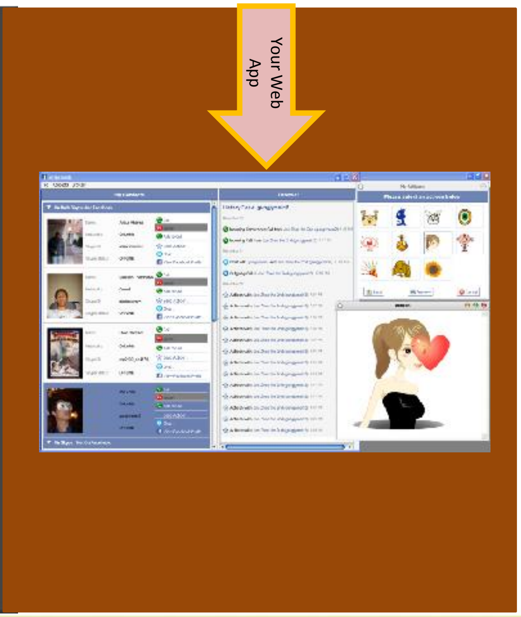

Client
Display Management
Speaker
Mic
System GUI/TUI
Audio
Communications/Collaboration Graphic User Interface
Hardware Control
Pre-proc
Out Proc
Lip Sync
Out Proc
Pre-proc
Video Stream
Encode
Codec
Decode
Encode
Codec
Decode
Audio Stream
Media Engine
Pre-Pkt
Recieve
Recive
Pre-Pkt
Network Interface

In the Browser

WebRTC
Media Processing

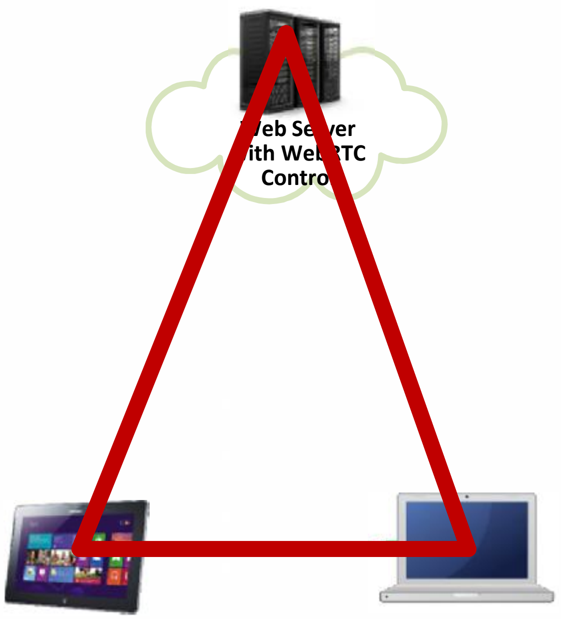
HTML – HTML5
Visual User Experience


Your web app #1
Your web app #2
...
Your web app #3
The web
Web API (edited by W3C WG)
WebRTC C++ API (PeerConnection)
Session management / Abstract signaling (Session)
Voice Engine
iSAC / iLBC Codec
NetEQ for voice
Echo Canceler / Noise Reduction
Video Engine
VP8 Codec
Video jitter buffer
Image enhancements
Transport
SRTP
Multiplexing
P2P STUN + TURN + ICE
Audio Capture/Render
Video Capture
Network I/O
Your browser
API for web developers
API for browser makers
Overrideable by browser makers

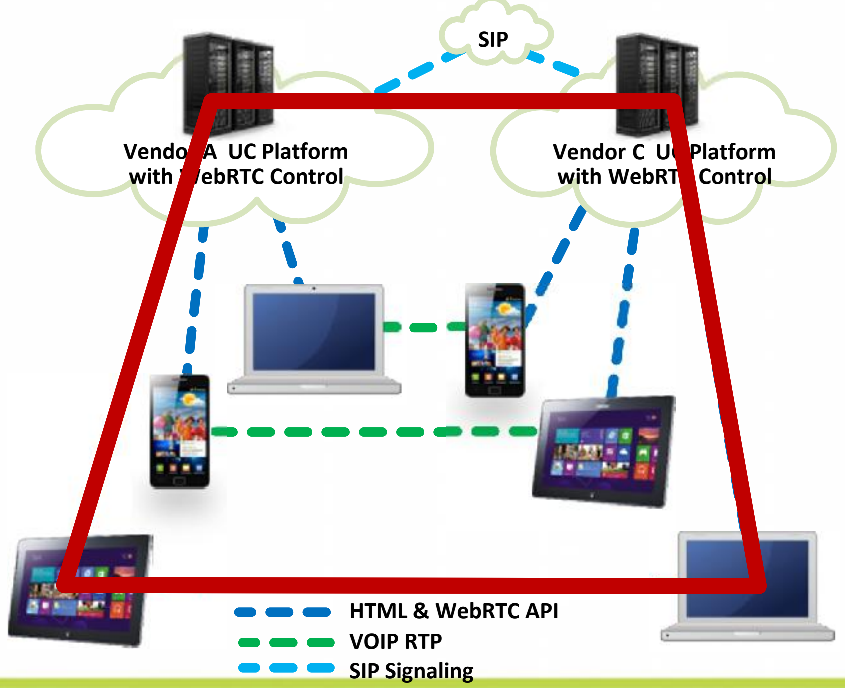

Your Web App

WebRTC Implementations

Adding WebRTC to Any Web Server

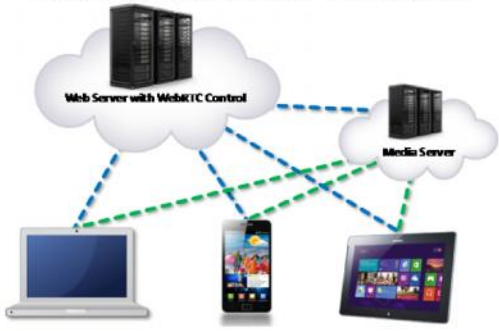

eb Se ver
ith We RTC
Contro

WebRTC as an extension to existing networks of servers (Carriers)

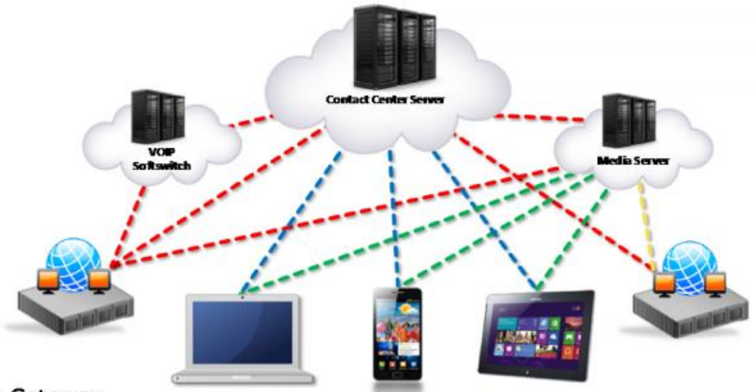

SIP
Vendo A UC Platform
with ebRTC Control
Vendor C U Platform
with WebRT Control
HTML & WebRTC API
VOIP RTP
SIP Signaling

Other WebRTC Enterprise Integrations

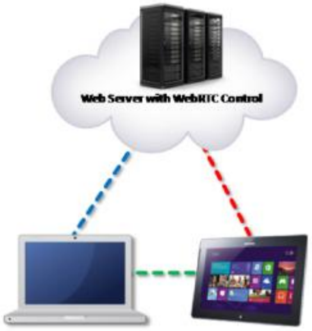
Integrating a Media Server with WebRTC


Web Server with WebRTC Control
Media Server

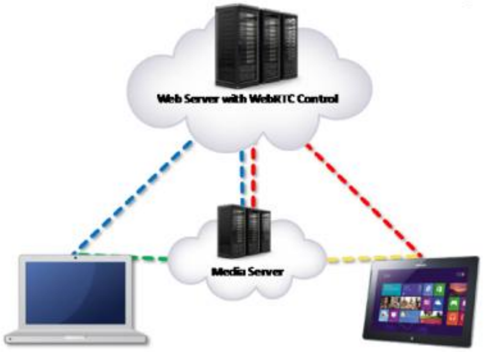
Enabling an Existing Contact Center product with WebRTC


Contact Center Server
VOIP Softswitch
Media Server

SIP Integration with RTP

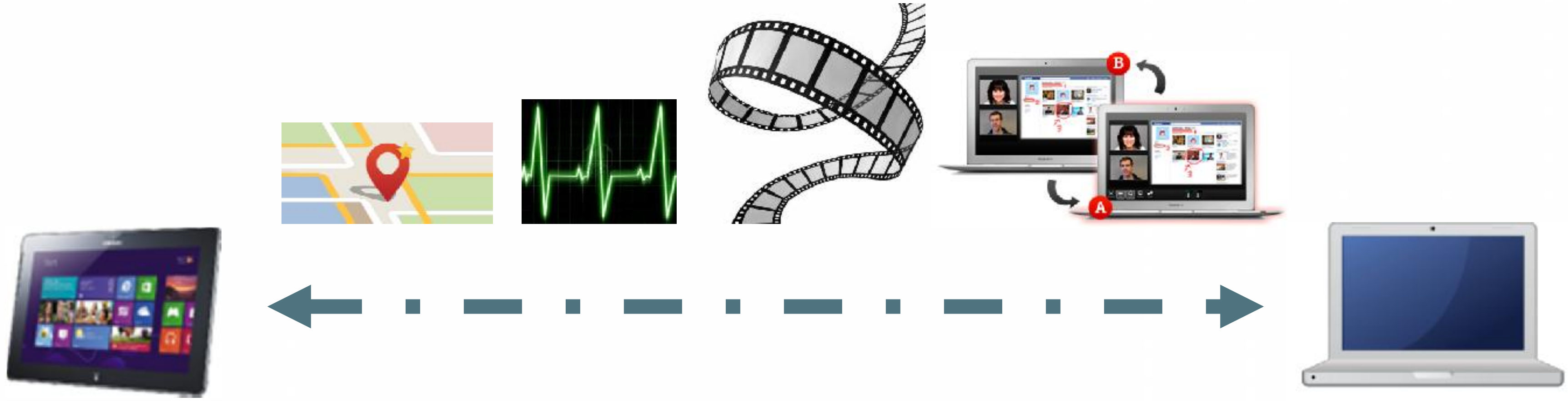

Web Server with WebRTC Control

WebRTC and SIP Clients with Media Gateway


Web Server with WebRTC Control
Media Server

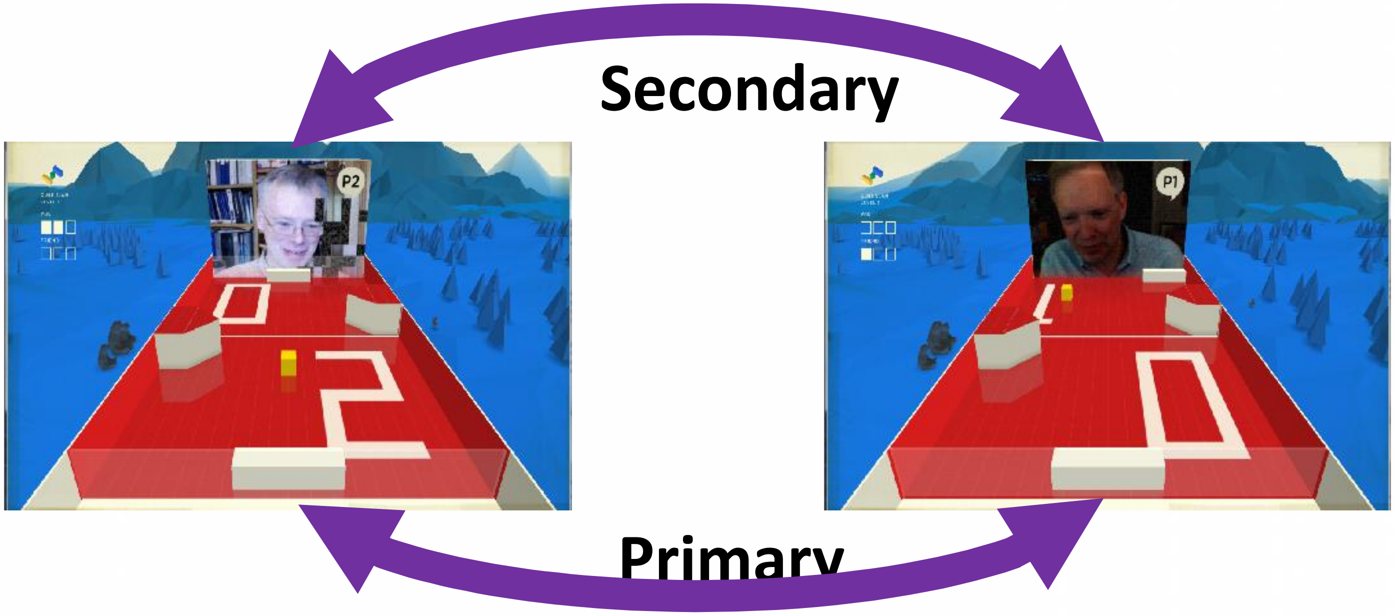
🟦 HTML & WebRTC API
🟩 VOIP RTP
▨ Vendor Media
🟥 Vendor SIP

The Data Channel



Additive Communications

Is Cube Slam Cute or A Subversive Plot?



What Percentage of Web Activities would Benefit from Real-Time?

WebRTC and the Web

Replacing What Exists or Augmenting

bistri
vidtel
weemo
Vonage
Crazy generous.
Genesys
INTERACTIVE INTELLIGENCE
Quobis
leading your IT-tinerary
GENBAND
APIDAZE
TELEDINI
Temasys
AVAYA
vLine
BolderThinking
TROPO

Real-time as adjunct to an activity

Playing Cube Slam against Bob the Diversionary Bear

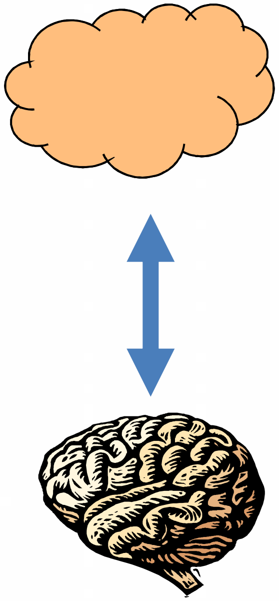
PubNub

Chess Cam by Spacegoo

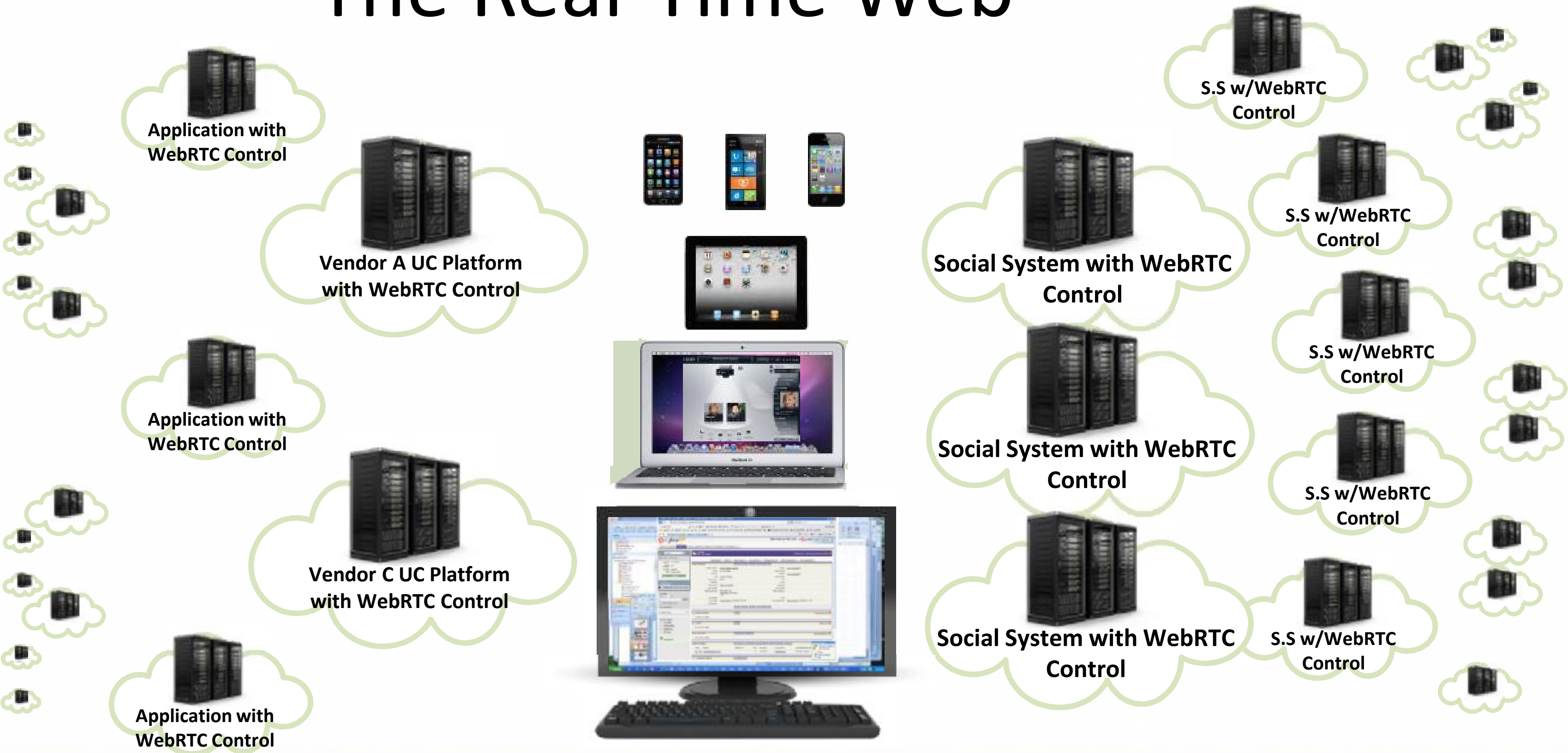
Real-time as extension of an interaction or app

ebay
SAVE ON NEW FACTORY OEM PARTS
Aweditorium

Real-time all the time



The Real-Time Web



Application with WebRTC Control

Application with WebRTC Control

Application with WebRTC Control

Vendor A UC Platform with WebRTC Control

Vendor C UC Platform with WebRTC Control

Social System with WebRTC Control

Social System with WebRTC Control

Social System with WebRTC Control

S.S w/WebRTC Control

S.S w/WebRTC Control

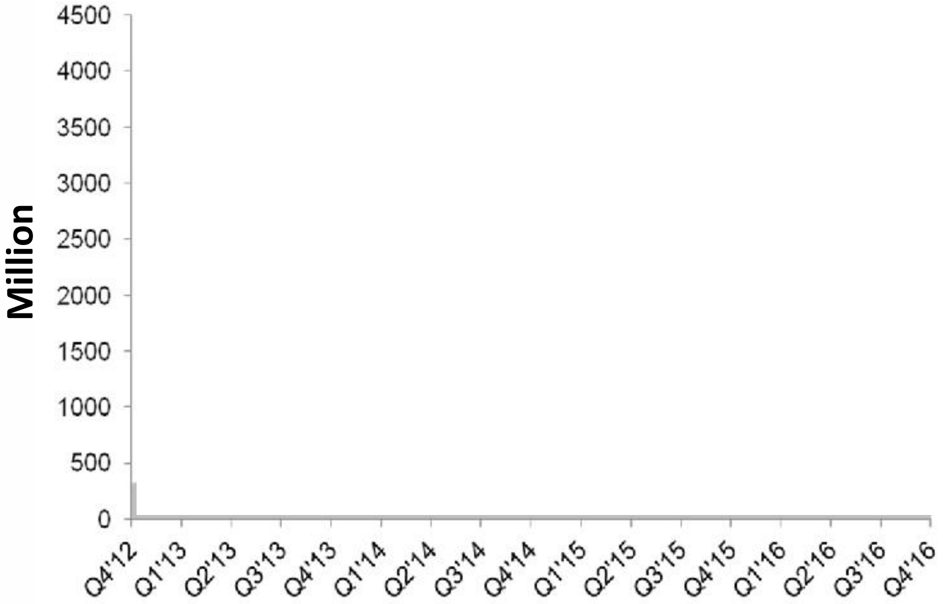
S.S w/WebRTC Control

S.S w/WebRTC Control

S.S w/WebRTC Control

WebRTC forecasts: Over 4 billion devices

Device base supporting WebRTC growing Zero→4bn in 4 years



Source: Disruptive Analysis WebRTC Strategy Report, June 2013 & Q2 Update June 2013
Definitions & methodology in report **- See disruptivewireless.blogspot.com for details**

Company Positions on WebRTC

Promoters

Google
ERICSSON
CISCO
CaféX communications
MITEL
acme packet
Alcatel·Lucent
GENBAND
ORACLE
UNIFY
INTERACTIVE INTELLIGENCE
Deliberately Innovative
inGate
AVAYA
Microsoft

Uncommitted /Following

JUNIPER NETWORKS

Telco Adotion

at&t
Telefónica
Deutsche Telekom
france telecom

Potential Barriers

- Microsoft Decisions Raise Issues
  - Skype web option
  - IE will only support ORTC/WebRTC1.1
  - IE will only support H.264, Google will only support VP8
- Apple is not committing
  - Could block app in App Store
  - Indications are they will support as a standard
  - H264/5 support an issue

WebRTC Benefits

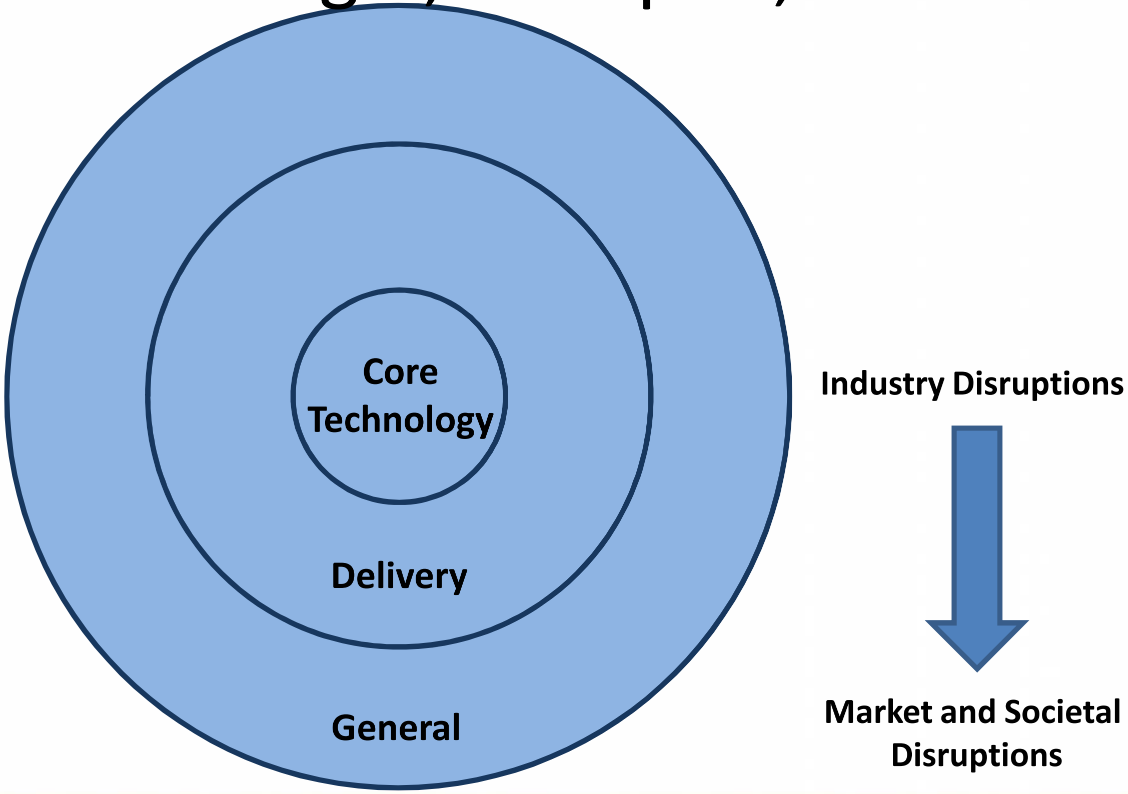
WebRTC Services Provider

WebRTC enables any web server to deliver a unique real time communications experience, with simplicity and reliability, without dependence on service providers or other services.

WebRTC Services Consumer

WebRTC enables users to participate in a communications experience as delivered by any web site without downloads, registration or general cost.

Game Changer, disrupter, Transformer?



Core Technology

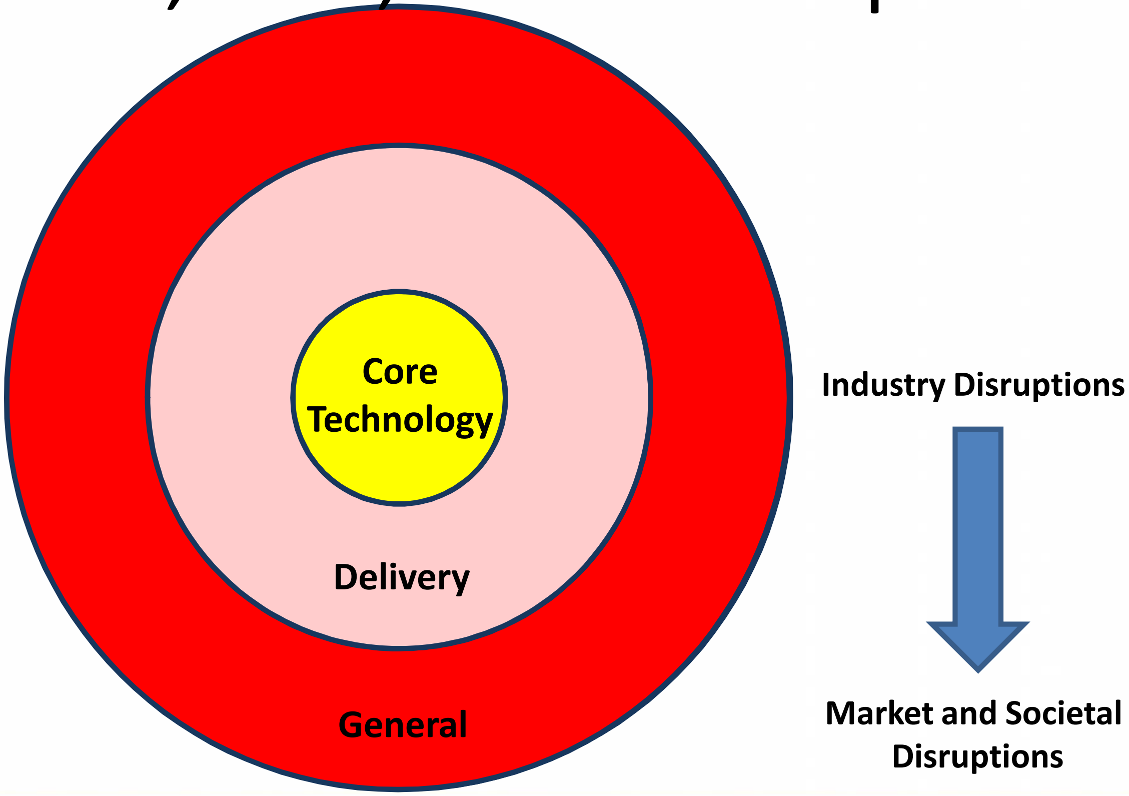
Delivery

General

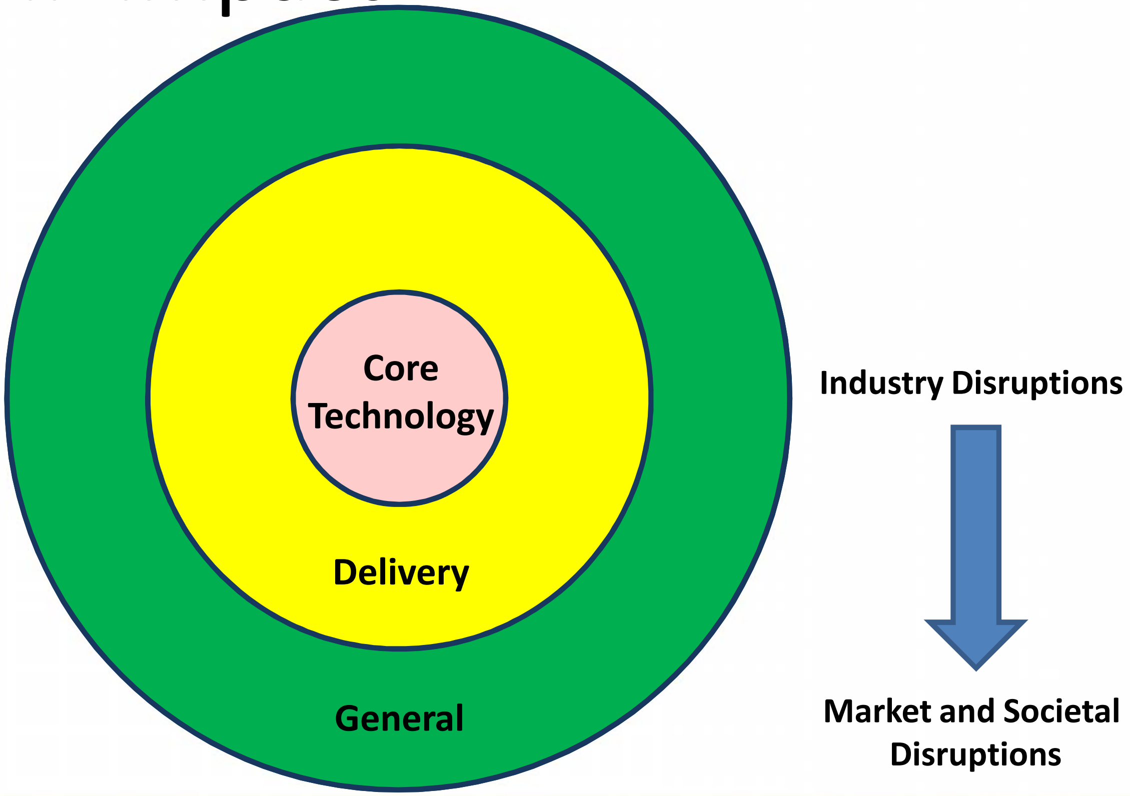
Industry Disruptions

Market and Societal Disruptions

WWW, web, browser Impact


Core Technology
Delivery
General
Industry Disruptions
Market and Societal Disruptions

VoIP Impact



Core Technology

Delivery

General

Industry Disruptions

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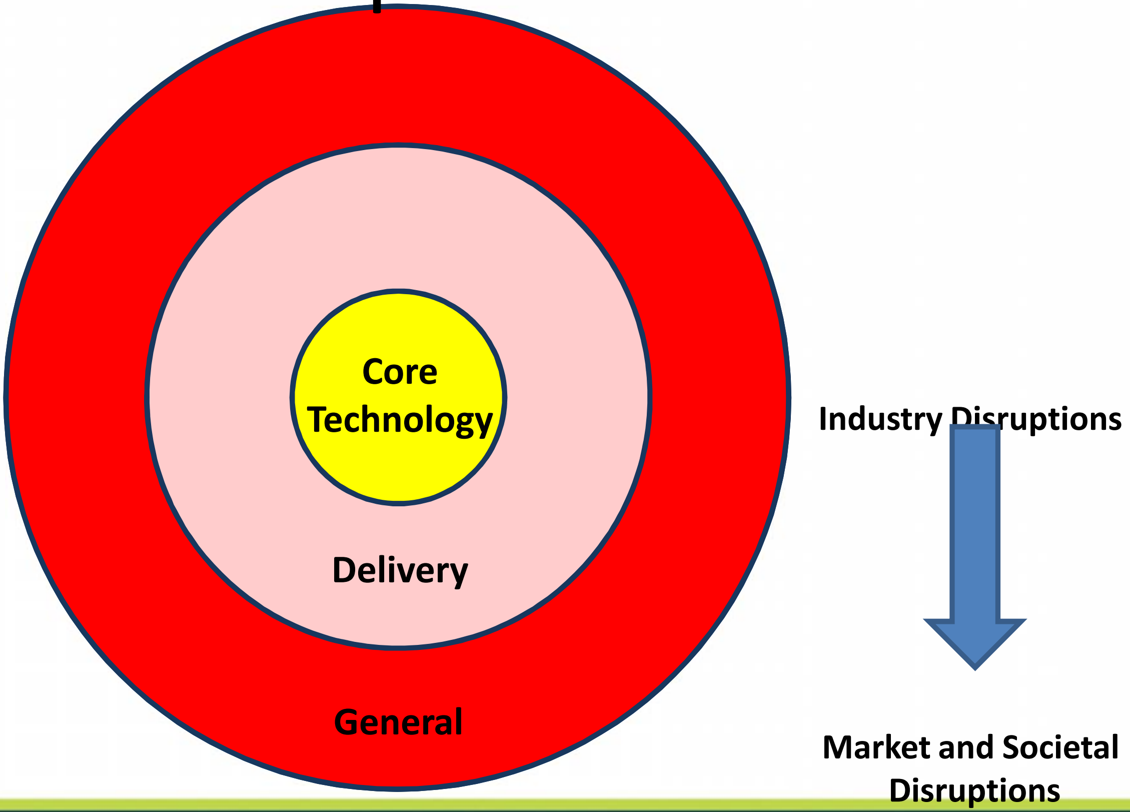
WebRTC Impact



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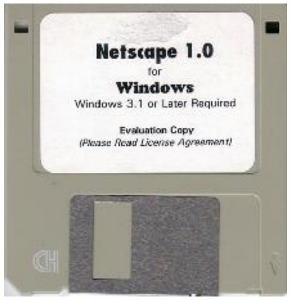

Netscape 1.0
for
Windows
Windows 3.1 or Later Required
Evaluation Copy
(Please Read License Agreement)

….and the world changed

…..and it will again…….

WebRTC

WebRTC Service Provider Impact

- Broad Device Integration
- Both customer and other devices

- Enabling Collaboration
- Web Representation

- Enterprise Services
- Security Services

WebRTC Enterprise Impact

- BYOD

- Extending Collaboration
- Communications Portal

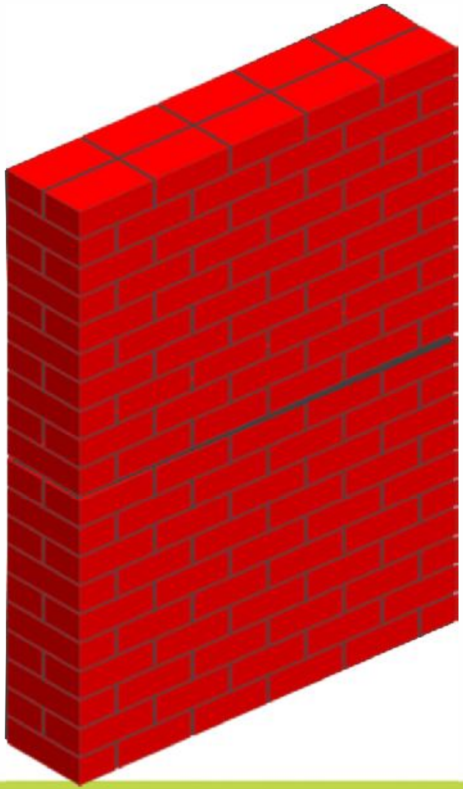
- Transforming Customer Interaction
- Remote Agents

- 97% of buyers visit a web-site first.
  - BIA Kelsey, 2011

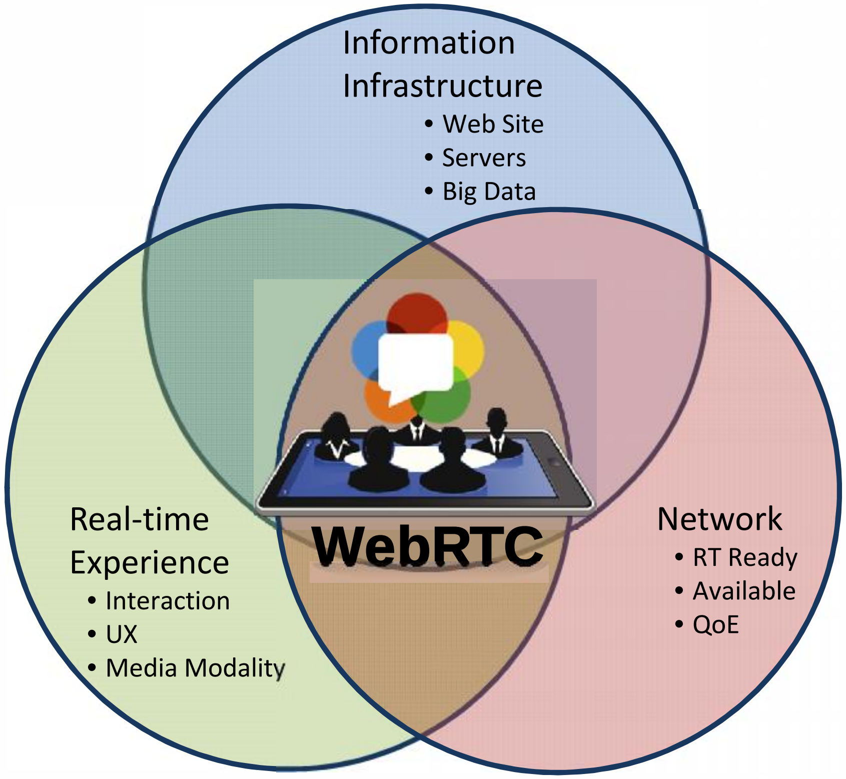
- By 2015 the Marketing Technologists budget will surpass the CIO's budget.
  - Gartner Group, 2012

- 70-90% of Contact Center calls are proceeded by a web-site visit in NA
  - PKE Consulting Analysis 2013

CHASE
Chase Auto Application
Personal information



Interaction at the Intersection



Information Infrastructure
- Web Site
- Servers
- Big Data

Real-time Experience
- Interaction
- UX
- Media Modality

Network
- RT Ready
- Available
- QoE

Interaction Experience 2.0

Getting the best Possible Employee to Interact with the Customer/Contact

Contextual

Optimized

Having ALL of the information to resolve the Customer/Contact problem

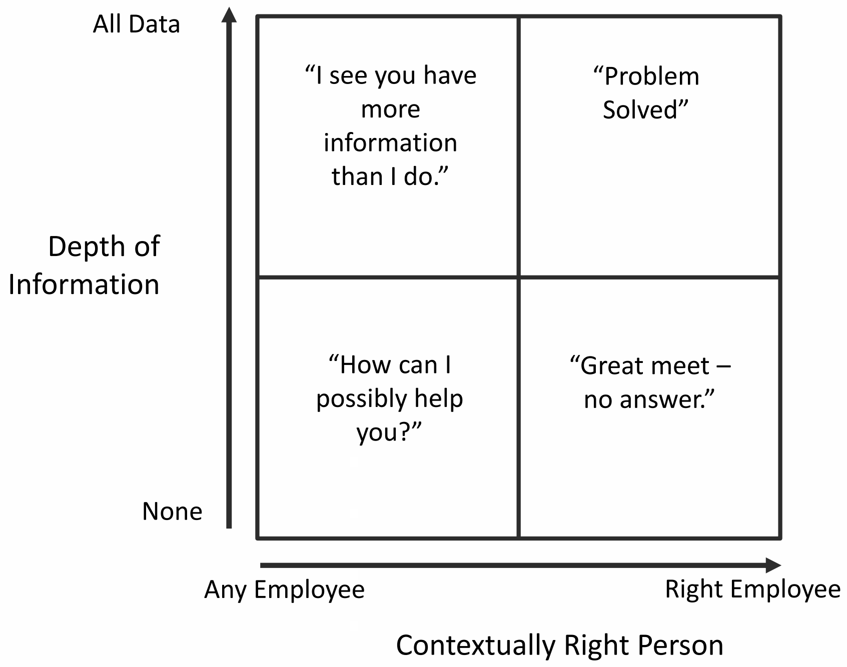
- Complete
- Accessible

Having the right communications modality the best possible experience

- Optimized
- Empathetic

Improving Customer Interaction

Getting the Right Employee



All Data

Depth of Information

None

"I see you have more information than I do."

"Problem Solved"

"How can I possibly help you?"

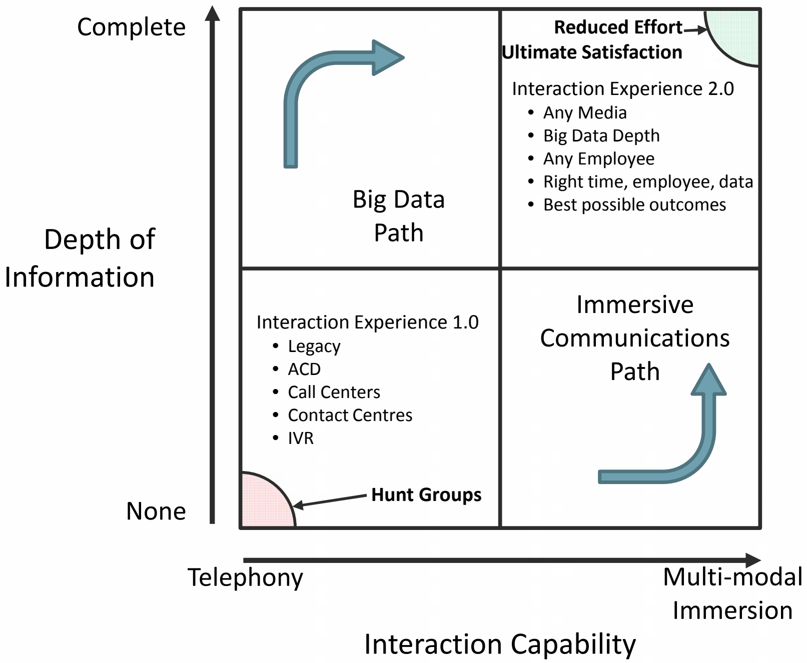
"Great meet – no answer."

Any Employee

Right Employee

Contextually Right Person

Having Easy Communications



Complete

Depth of Information

None

Big Data Path

Reduced Effort

Ultimate Satisfaction

Interaction Experience 2.0
- Any Media
- Big Data Depth
- Any Employee
- Right time, employee, data
- Best possible outcomes

Interaction Experience 1.0
- Legacy
- ACD
- Call Centers
- Contact Centres
- IVR

Hunt Groups

Immersive Communications Path

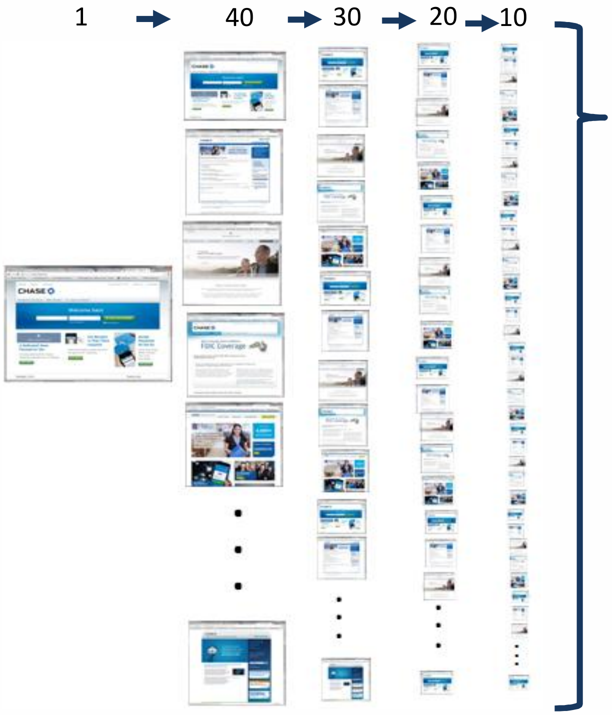
Telephony

Multi-modal Immersion

Interaction Capability

The Web Disconnect

Typical Fortune 1000 Web Site



240,000
Discrete
Contextual
Links

≠

375
Discrete
Contact
Routes

The challenge is mapping to the current systems LIMITED resources

Typical Fortune 1000
Contact Centre/IVR

3

800-406-2345
866-675-4759
866-657-9867

5 Question 1

5 Question 2

5 Question 3

Customer Classes

	Percentage	Description	Outcome
Concierge Class	5-15%	High value Customers	Expectation of direct access to agents
Web Class	70-90%	Self Service Customers	Use the web first and then go to an agent based response
Loss Class	5-15%	Low value non-web Customers	Phone access IVR to Agent

Service Goals

Concierge Class

Always have an agent available – minimal or no IVR

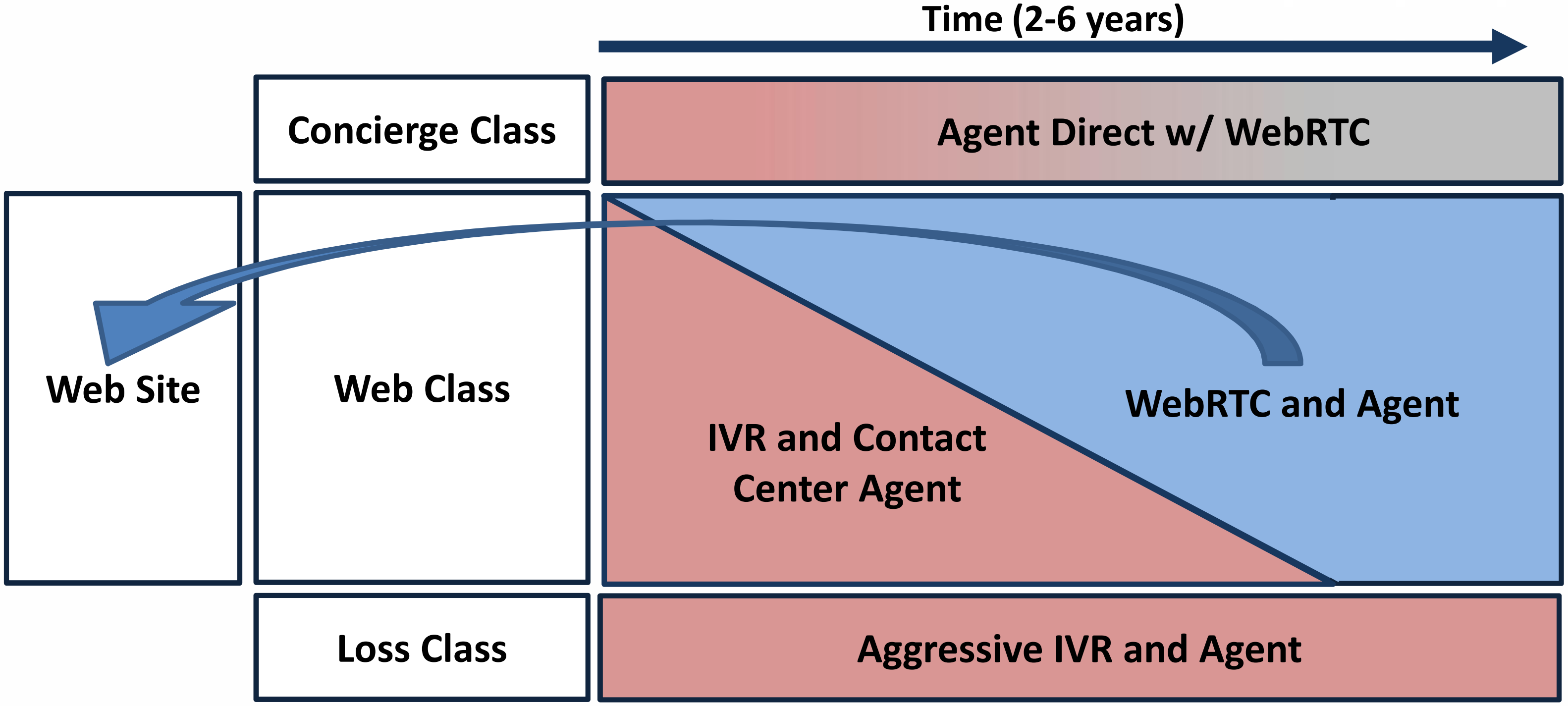
Web Class

Optimize web experience to minimize transitions
Use web context to both reduce effort and increase satisfaction
Provide feedback from agents to web

Loss Class

Use IVR and other mechanisms to minimize agent impact
Reduced concern about satisfaction – loss is OK

Optimizing with WebRTC



Time (2-6 years)

Concierge Class

Agent Direct w/ WebRTC

Web Site

Web Class

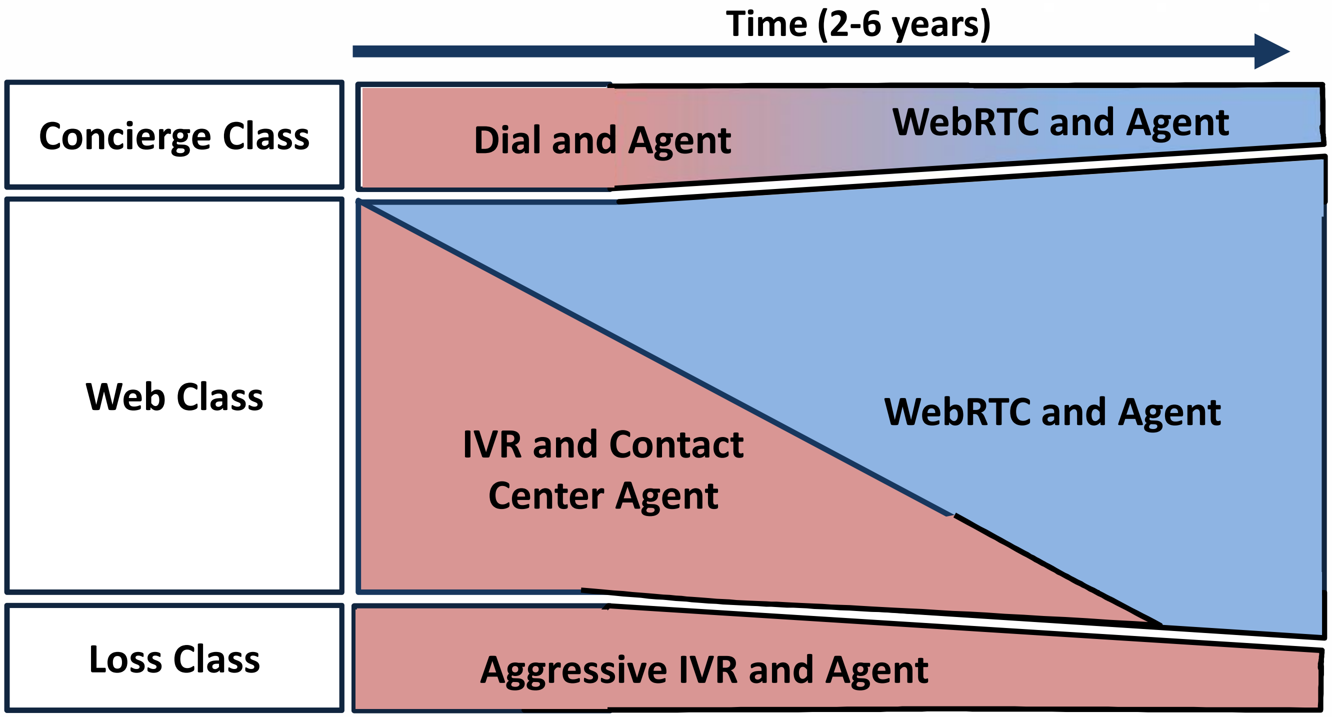
IVR and Contact
Center Agent

WebRTC and Agent

Loss Class

Aggressive IVR and Agent

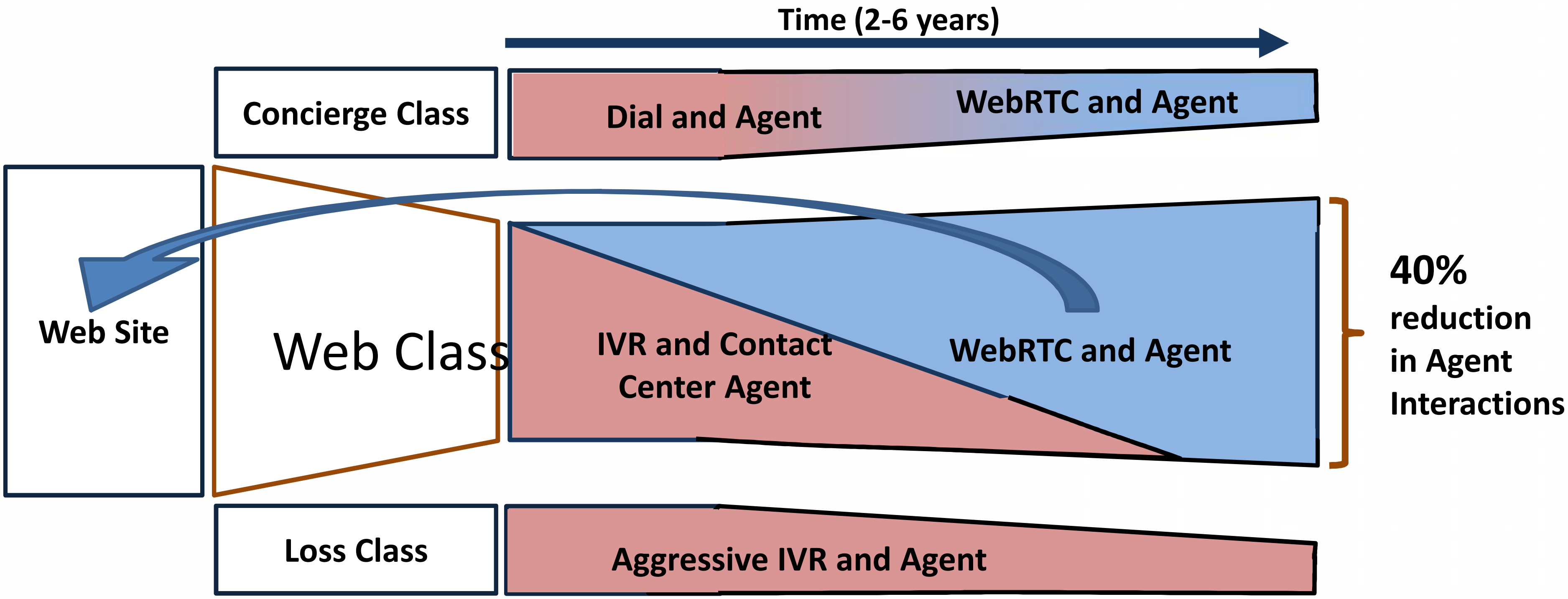
Digital Learning



Time (2-6 years)

Concierge Class	Dial and Agent	WebRTC and Agent
Web Class	IVR and Contact Center Agent	WebRTC and Agent
Loss Class	Aggressive IVR and Agent	

Reducing Agent Interaction



Time (2-6 years)

Concierge Class

Dial and Agent

WebRTC and Agent

Web Site

Web Class

IVR and Contact Center Agent

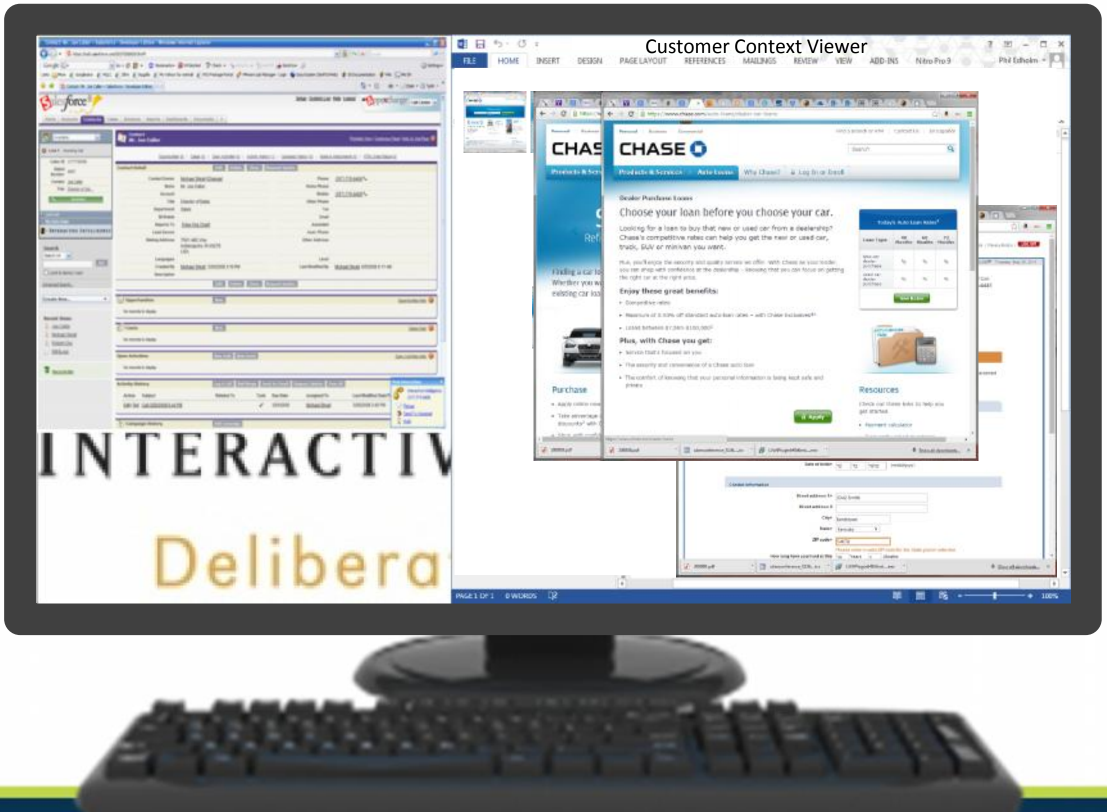
WebRTC and Agent

40%
reduction
in Agent
Interactions

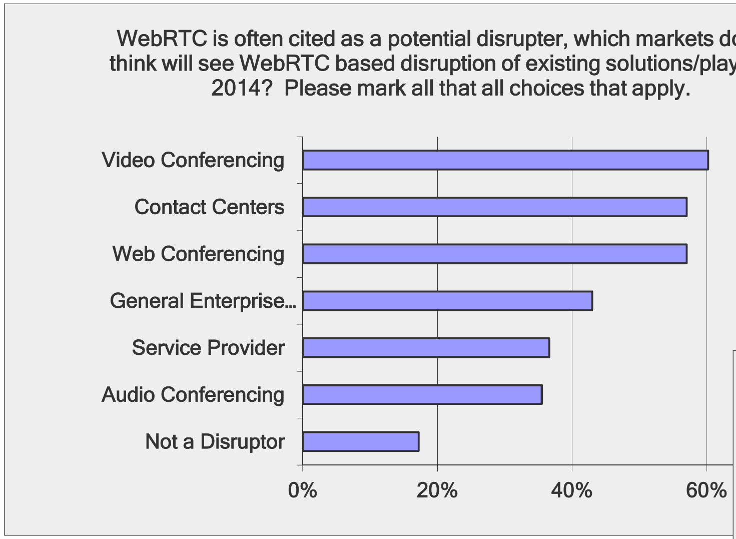
Loss Class

Aggressive IVR and Agent

Contextual Interactions

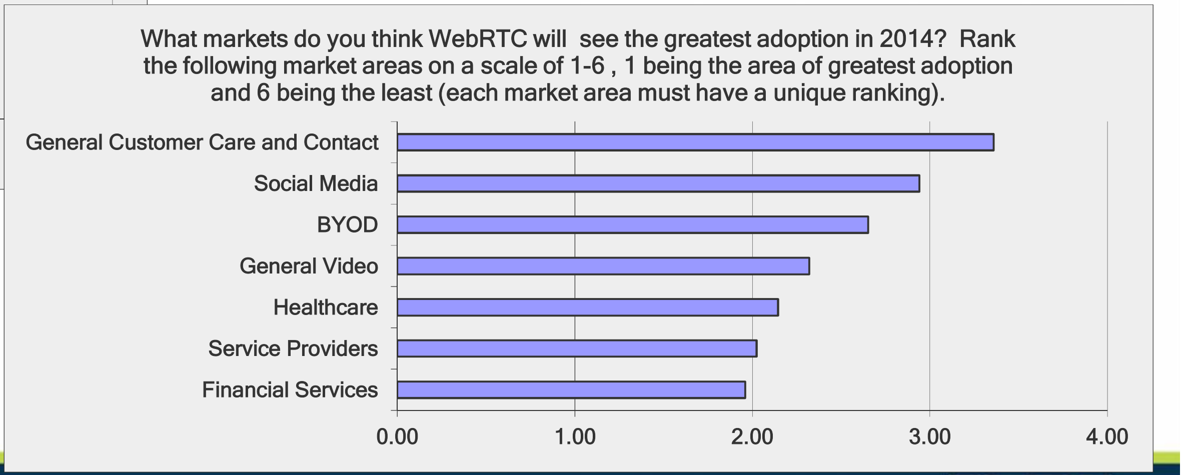

Customer Context Viewer
CHASE
INTERACTIV
Delibera

Where is there WebRTC Focus?



WebRTC is often cited as a potential disrupter, which markets do you think will see WebRTC based disruption of existing solutions/players in 2014? Please mark all that all choices that apply.

There are over 30 start-ups focused in this area



What markets do you think WebRTC will see the greatest adoption in 2014? Rank the following market areas on a scale of 1-6 , 1 being the area of greatest adoption and 6 being the least (each market area must have a unique ranking).

WebRTC World WebRTC Outlook Survey, Dec13
100 Respondents from the WebRTC Community

WebRTC is……

The Web

Money

Dean Material

Speakers

- Phil Edholm
  - PKE Cosnulting LLC
- Dean Bubley
  - Disruptive Analysis

Thank You

Please fill out an evaluation of this session

Phil Edholm
President and Principal
PKE Consulting LLC
pedholm@pkeconsulting.com
@PEdholm

Hidden Q&A Slide

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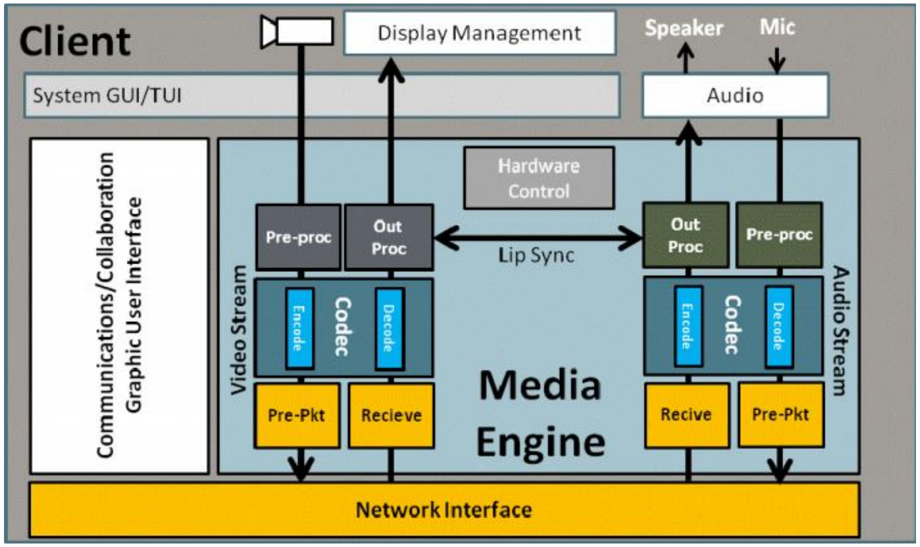
Client
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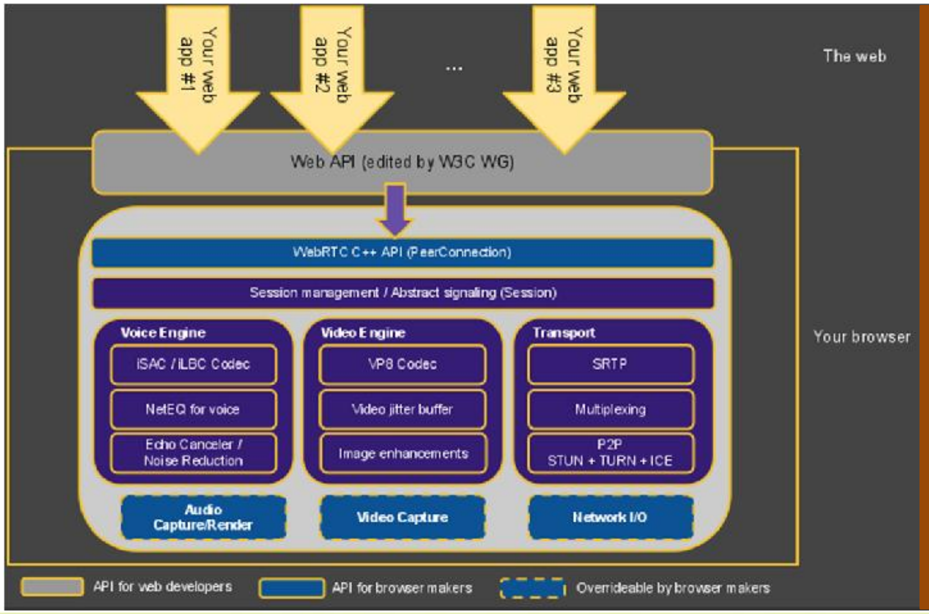
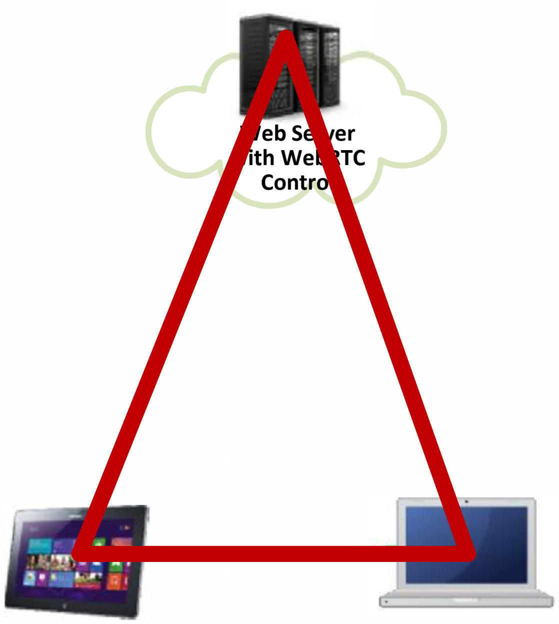

Your web app #1
Your web app #2
...
Your web app #3
The web
Web API (edited by W3C WG)
WebRTC C++ API (PeerConnection)
Session management / Abstract signaling (Session)
Voice Engine
iSAC / iLBC Codec
NetEQ for voice
Echo Canceler / Noise Reduction
Video Engine
VP8 Codec
Video jitter buffer
Image enhancements
Transport
SRTP
Multiplexing
P2P STUN + TURN + ICE
Audio Capture/Render
Video Capture
Network I/O
Your browser
API for web developers
API for browser makers
Overrideable by browser makers

Your Web App

WebRTC Implementations

Adding WebRTC to Any Web Server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Contro

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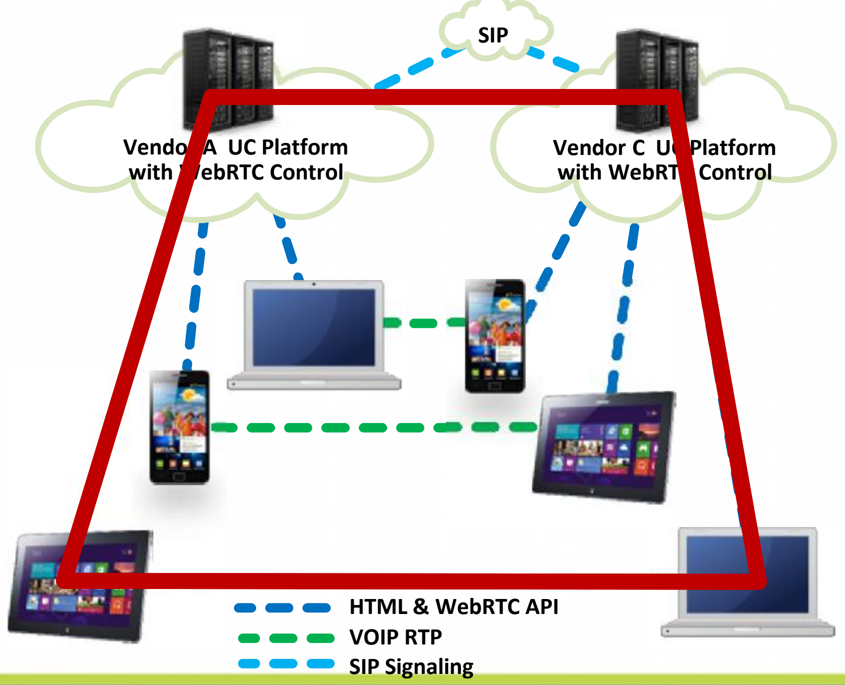
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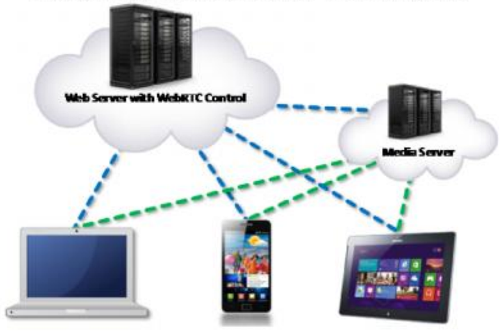
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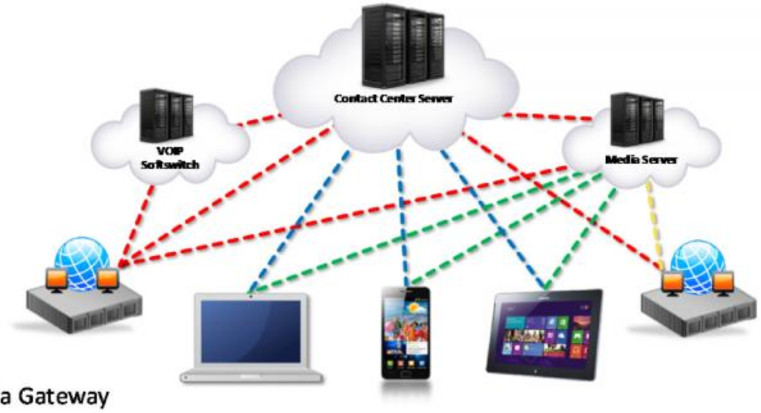
Contact Center Server
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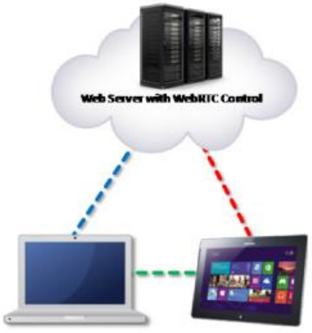
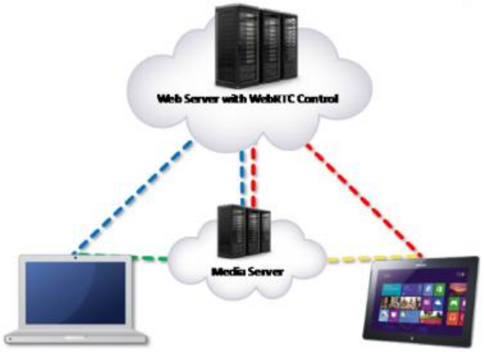
SIP Integration with RTP


Web Server with WebRTC Control

WebRTC and SIP Clients with Media Gateway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- 🟩 VOIP RTP
- ▨ Vendor Media
- 🟥 Vendor SIP

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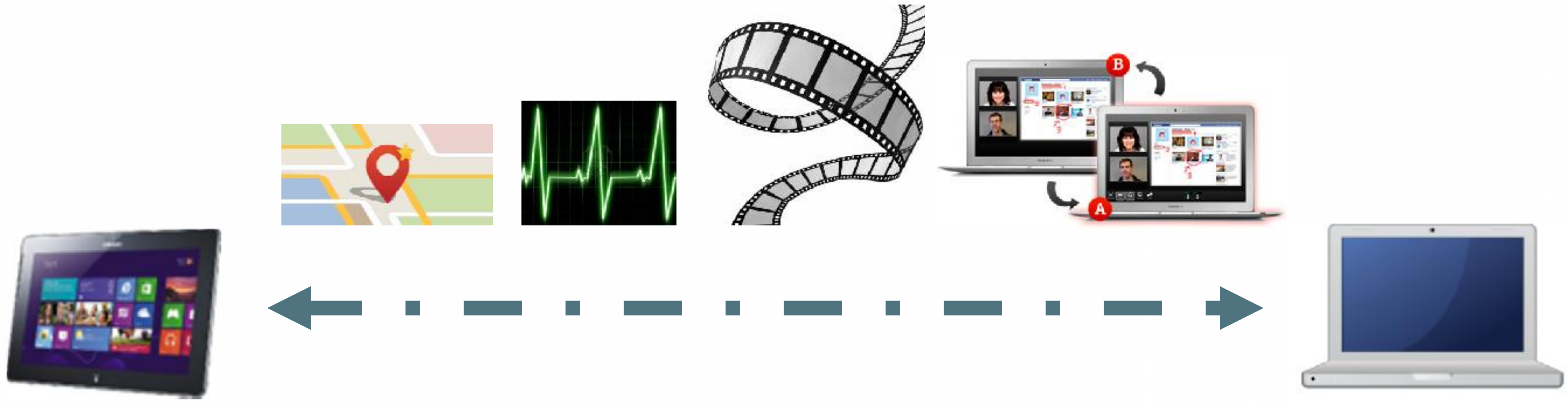

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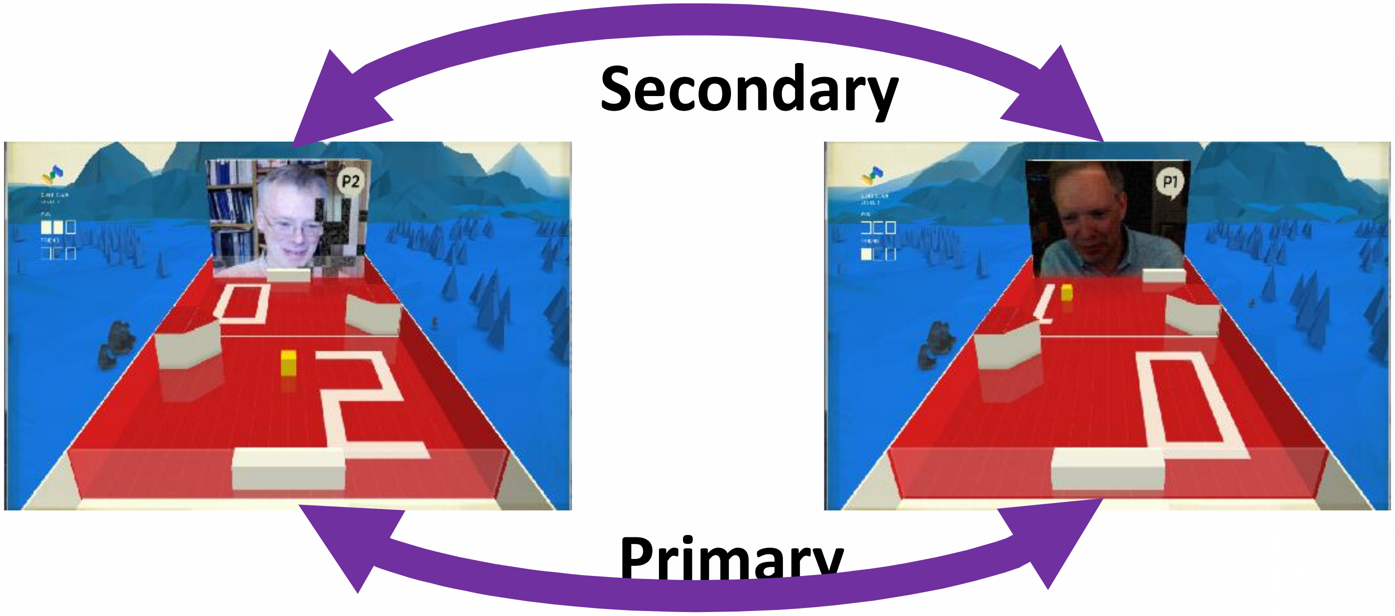

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WebRTC and the Web

Replacing What Exists or Augmenting

bistri
vidtel
weemo
Vonage
Crazy generous.
Genesys
INTERACTIVE INTELLIGENCE
Quobis
leading your IT journey
GENBAND
APIDAZE
TELEDINI
Temasys
AVAYA
vLine
BolderThinking
TROPO

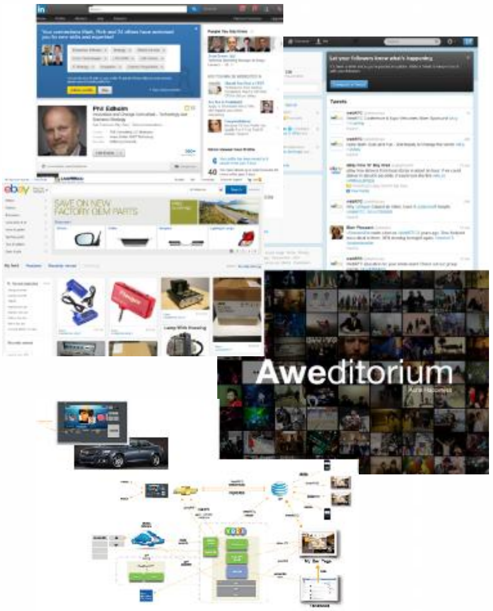
Real-time as adjunct to an activity

Playing Cube Slam against Bob the Diversionary Bear

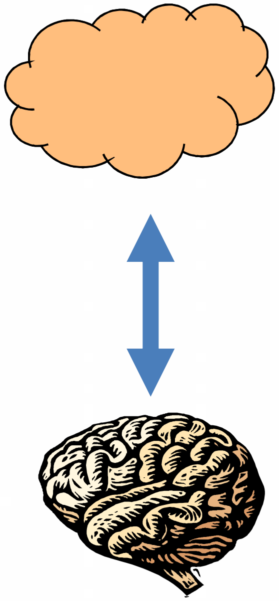
PubNub

Chess Cam by Spacegoo

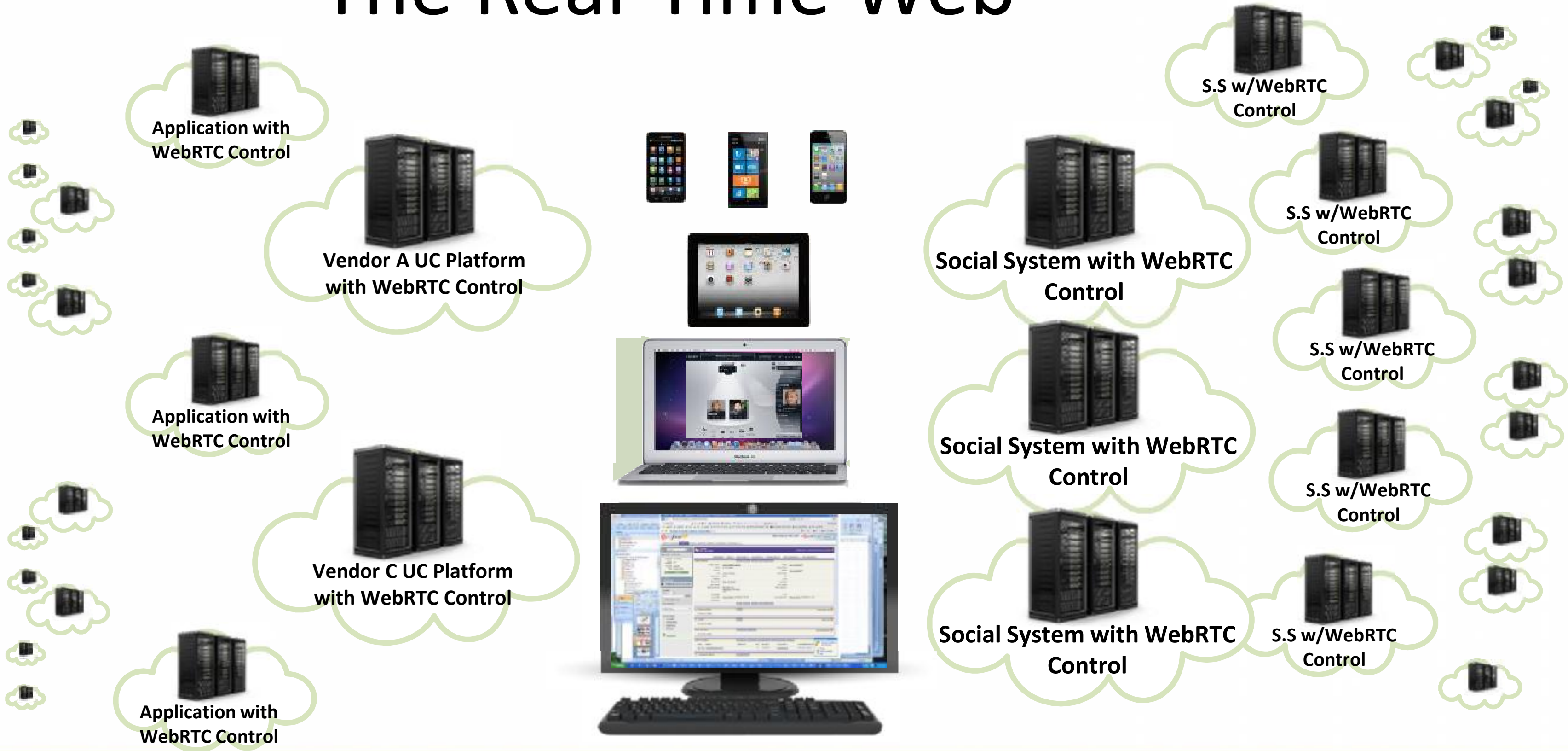
Real-time as extension of an interaction or app


ebay
Aweditorium

Real-time all the time



The Real-Time Web



Application with WebRTC Control

Application with WebRTC Control

Application with WebRTC Control

Vendor A UC Platform with WebRTC Control

Vendor C UC Platform with WebRTC Control

Social System with WebRTC Control

Social System with WebRTC Control

Social System with WebRTC Control

S.S w/WebRTC Control

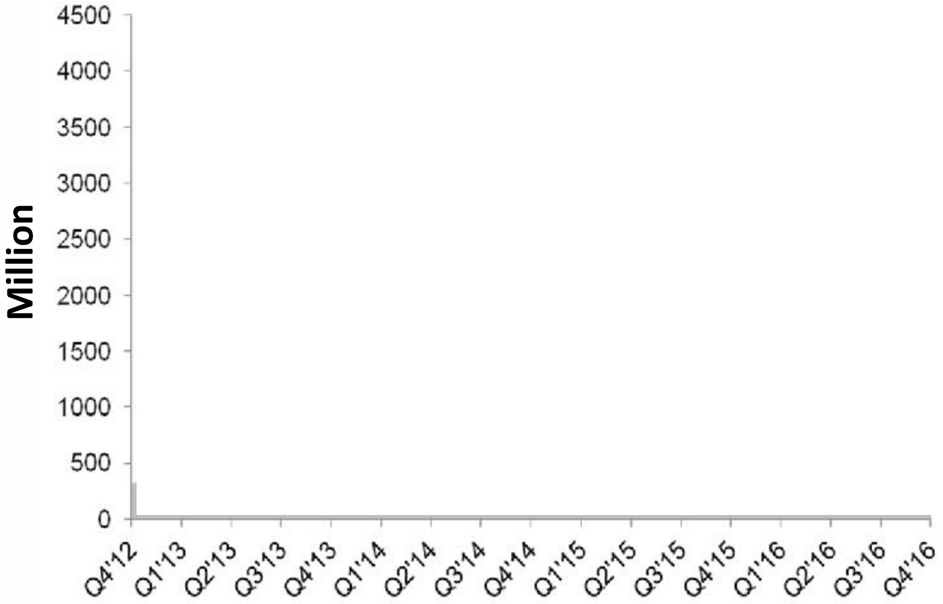
S.S w/WebRTC Control

S.S w/WebRTC Control

S.S w/WebRTC Control

S.S w/WebRTC Control

WebRTC forecasts: Over 4 billion devices



Device base supporting WebRTC growing Zero→4bn in 4 years

Source: Disruptive Analysis WebRTC Strategy Report, June 2013 & Q2 Update June 2013

Definitions & methodology in report **- See disruptivewireless.blogspot.com for details**

Company Positions on WebRTC

Promoters

Google
ERICSSON
CISCO
CaféX communications
MITEL
acme packet
Alcatel·Lucent
GENBAND
ORACLE
UNIFY
AVAYA
INTERACTIVE INTELLIGENCE Deliberately Innovative
inGate
Microsoft

Uncommitted /Following

JUNIPER NETWORKS

Telco Adotion

at&t
Telefónica
T Deutsche Telekom
france telecom

Potential Barriers

- Microsoft Decisions Raise Issues
  - Skype web option
  - IE will only support ORTC/WebRTC1.1
  - IE will only support H.264, Google will only support VP8
- Apple is not committing
  - Could block app in App Store
  - Indications are they will support as a standard
  - H264/5 support an issue

WebRTC Benefits

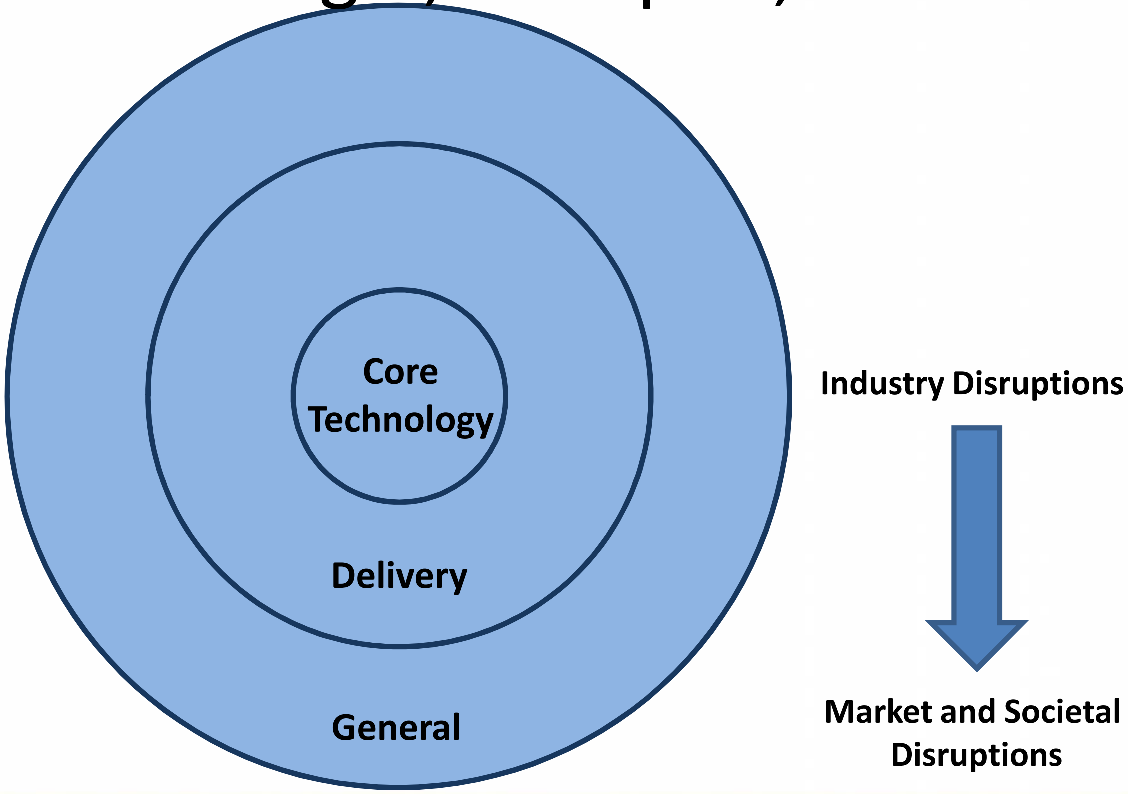
WebRTC Services Provider

WebRTC enables any web server to deliver a unique real time communications experience, with simplicity and reliability, without dependence on service providers or other services.

WebRTC Services Consumer

WebRTC enables users to participate in a communications experience as delivered by any web site without downloads, registration or general cost.

Game Changer, disrupter, Transformer?



Core Technology

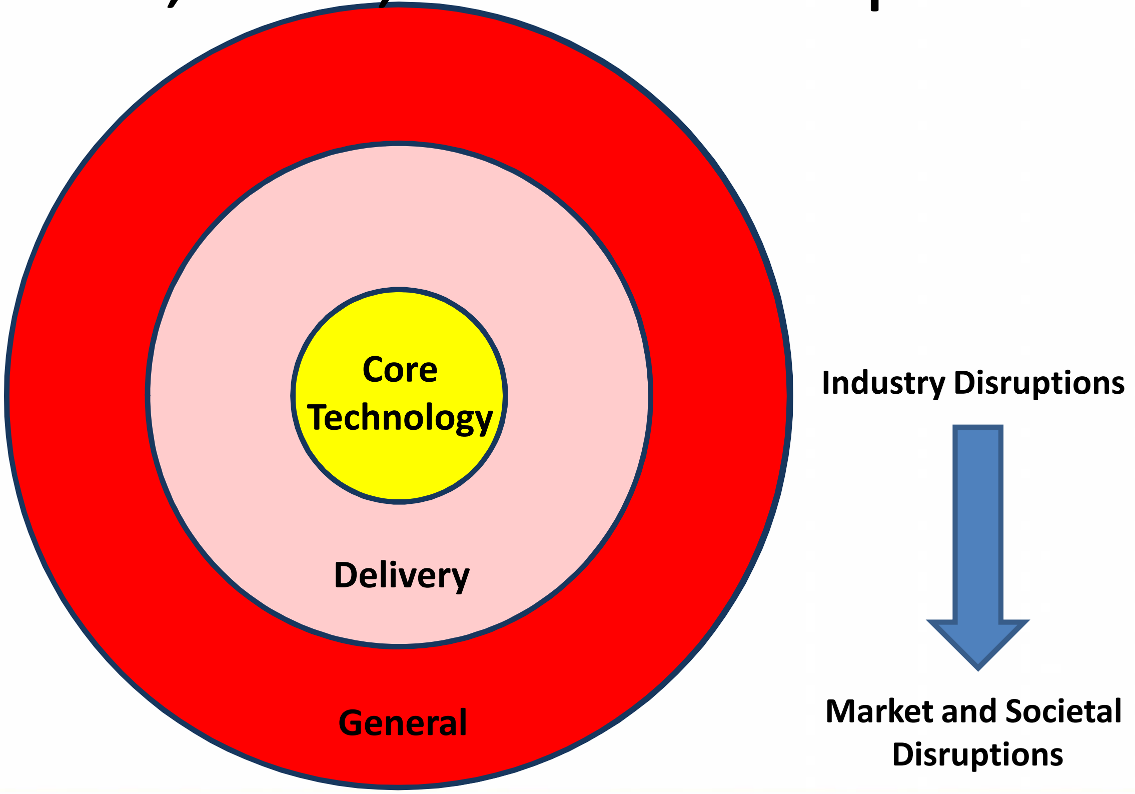
Delivery

General

Industry Disruptions

Market and Societal Disruptions

WWW, web, browser Impact



Core Technology

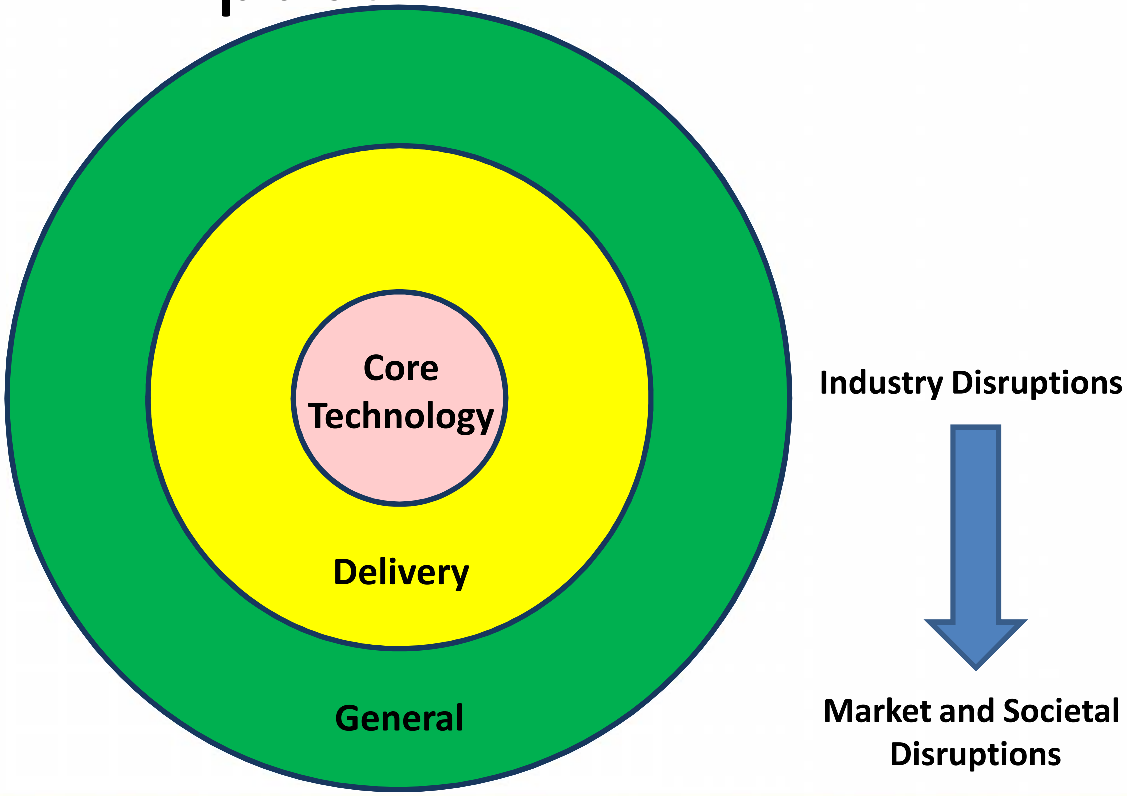
Delivery

General

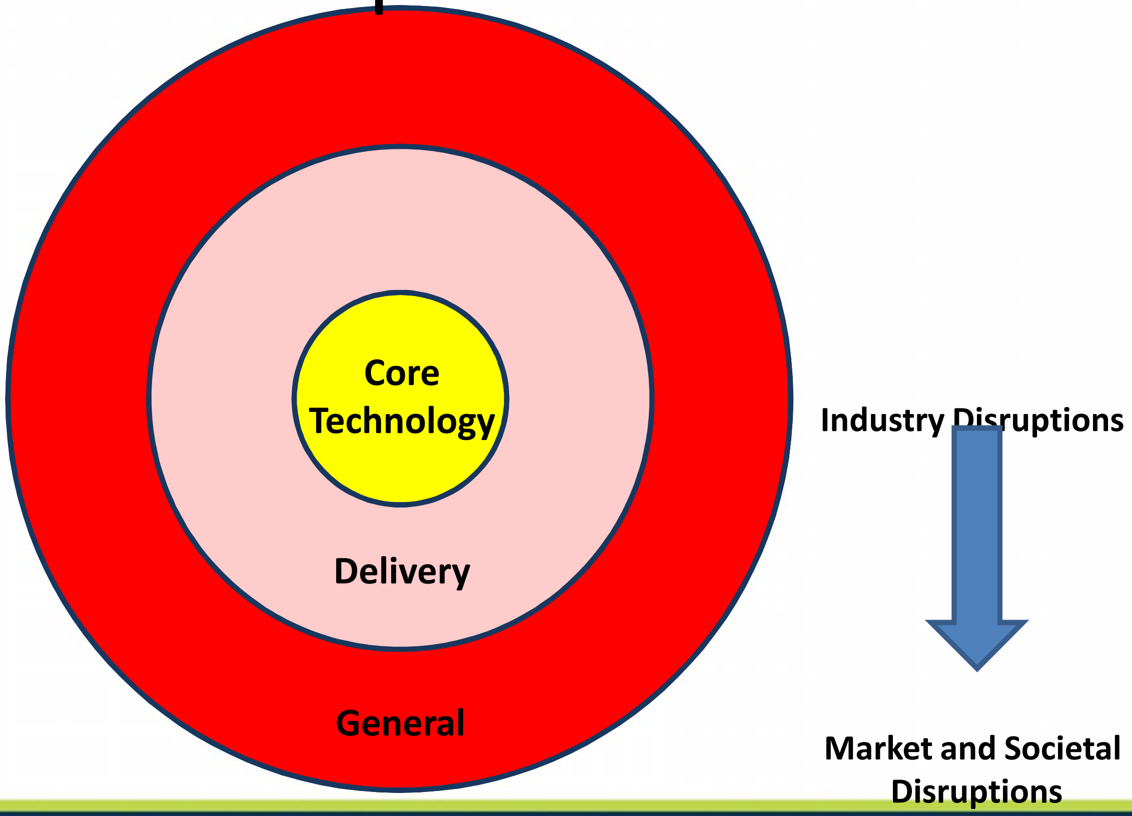
Industry Disruptions

Market and Societal Disruptions

VoIP Impact


Core Technology
Delivery
General
Industry Disruptions
Market and Societal Disruptions

WebRTC Impact



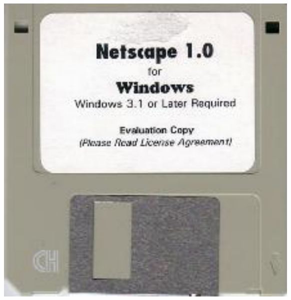
Core Technology

Delivery

General

Industry Disruptions

Market and Societal Disruptions


Netscape 1.0
for
Windows
Windows 3.1 or Later Required
Evaluation Copy
(Please Read License Agreement)

….and the world changed

…..and it will again…….

WebRTC Service Provider Impact

- Broad Device Integration
- Both customer and other devices

- Enabling Collaboration
- Web Representation

- Enterprise Services
- Security Services

WebRTC Enterprise Impact

- BYOD

- Extending Collaboration
- Communications Portal

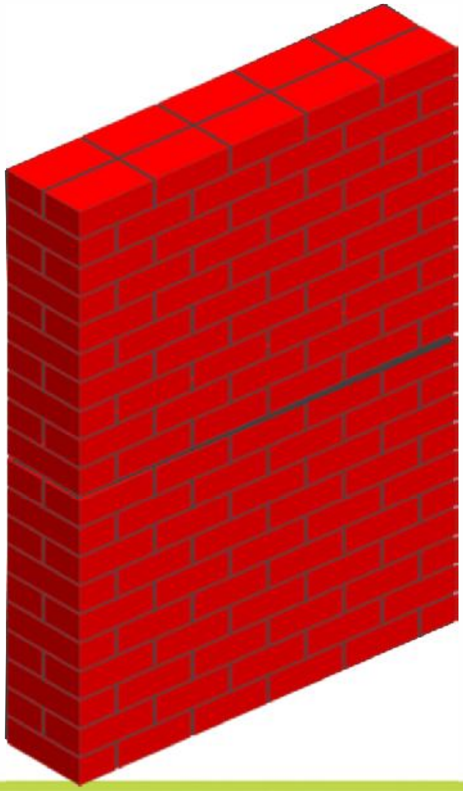
- Transforming Customer Interaction
- Remote Agents

- 97% of buyers visit a web-site first.
  - BIA Kelsey, 2011

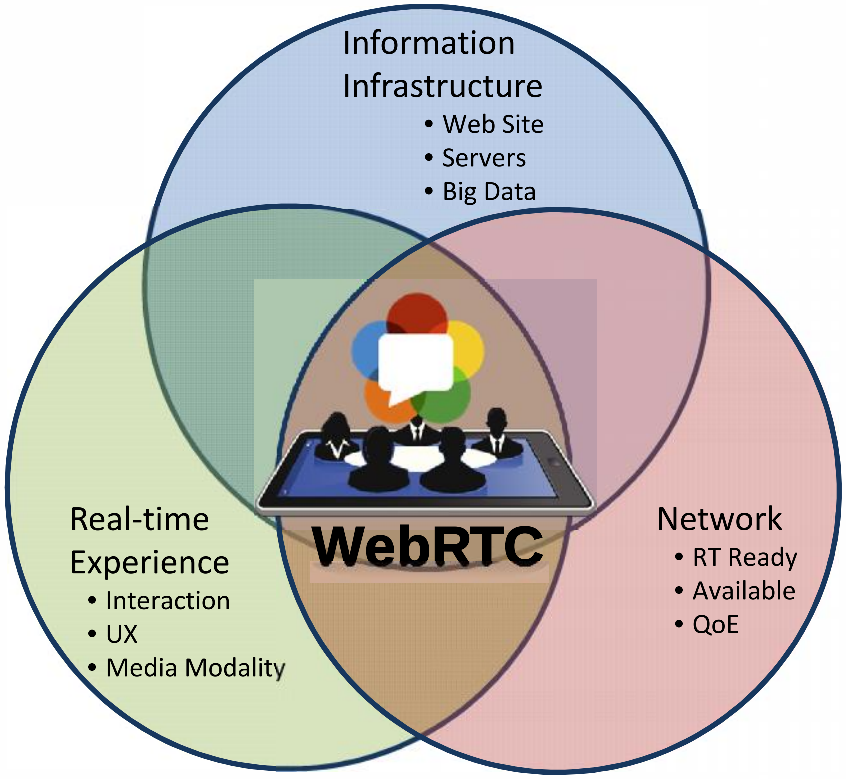
- By 2015 the Marketing Technologists budget will surpass the CIO’s budget.
  - Gartner Group, 2012

- 70-90% of Contact Center calls are proceeded by a web-site visit in NA
  - PKE Consulting Analysis 2013

CHASE
Chase Auto Application
Personal Information



Interaction at the Intersection



Information Infrastructure
- Web Site
- Servers
- Big Data

Real-time Experience
- Interaction
- UX
- Media Modality

Network
- RT Ready
- Available
- QoE

WebRTC

Interaction Experience 2.0

Getting the best Possible Employee to Interact with the Customer/Contact

Contextual

Optimized

Having ALL of the information to resolve the Customer/Contact problem

- Complete
- Accessible

Having the right communications modality the best possible experience

- Optimized
- Empathetic

Improving Customer Interaction

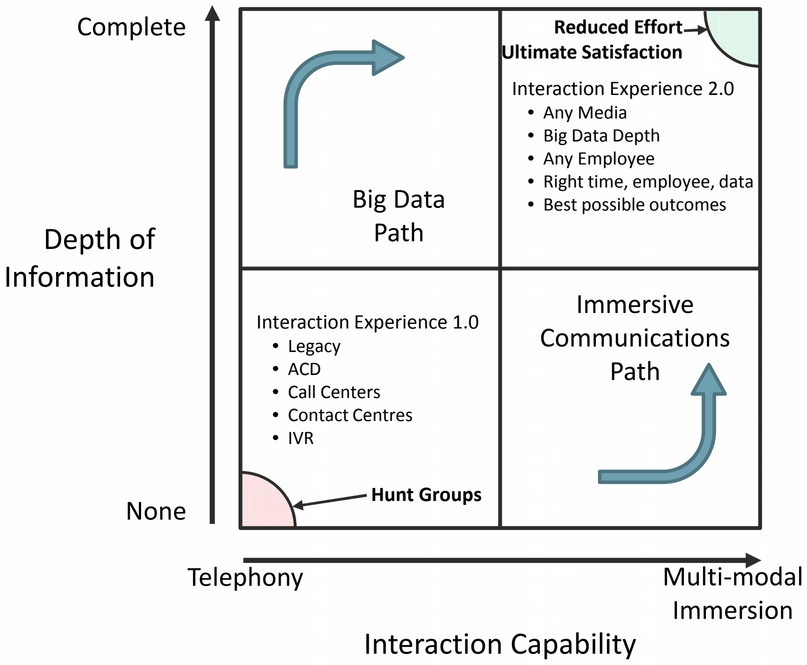
Getting the Right Employee

Depth of Information

Depth of Information	Any Employee	Right Employee
All Data	"I see you have more information than I do."	"Problem Solved"
None	"How can I possibly help you?"	"Great meet – no answer."

Contextually Right Person

Having Easy Communications


Complete
Depth of Information
None
Telephony
Multi-modal Immersion
Interaction Capability
Big Data Path
Reduced Effort
Ultimate Satisfaction
Immersive Communications Path
Hunt Groups

Interaction Experience 2.0
- Any Media
- Big Data Depth
- Any Employee
- Right time, employee, data
- Best possible outcomes

Interaction Experience 1.0
- Legacy
- ACD
- Call Centers
- Contact Centres
- IVR

The Web Disconnect

Typical Fortune 1000 Web Site

240,000 Discrete Contextual Links ≠ 375 Discrete Contact Routes

Typical Fortune 1000 Contact Centre/IVR

3
800-406-2345
866-675-4759
866-657-9867

5 Question 1

5 Question 2

5 Question 3

The challenge is mapping to the current systems LIMITED resources

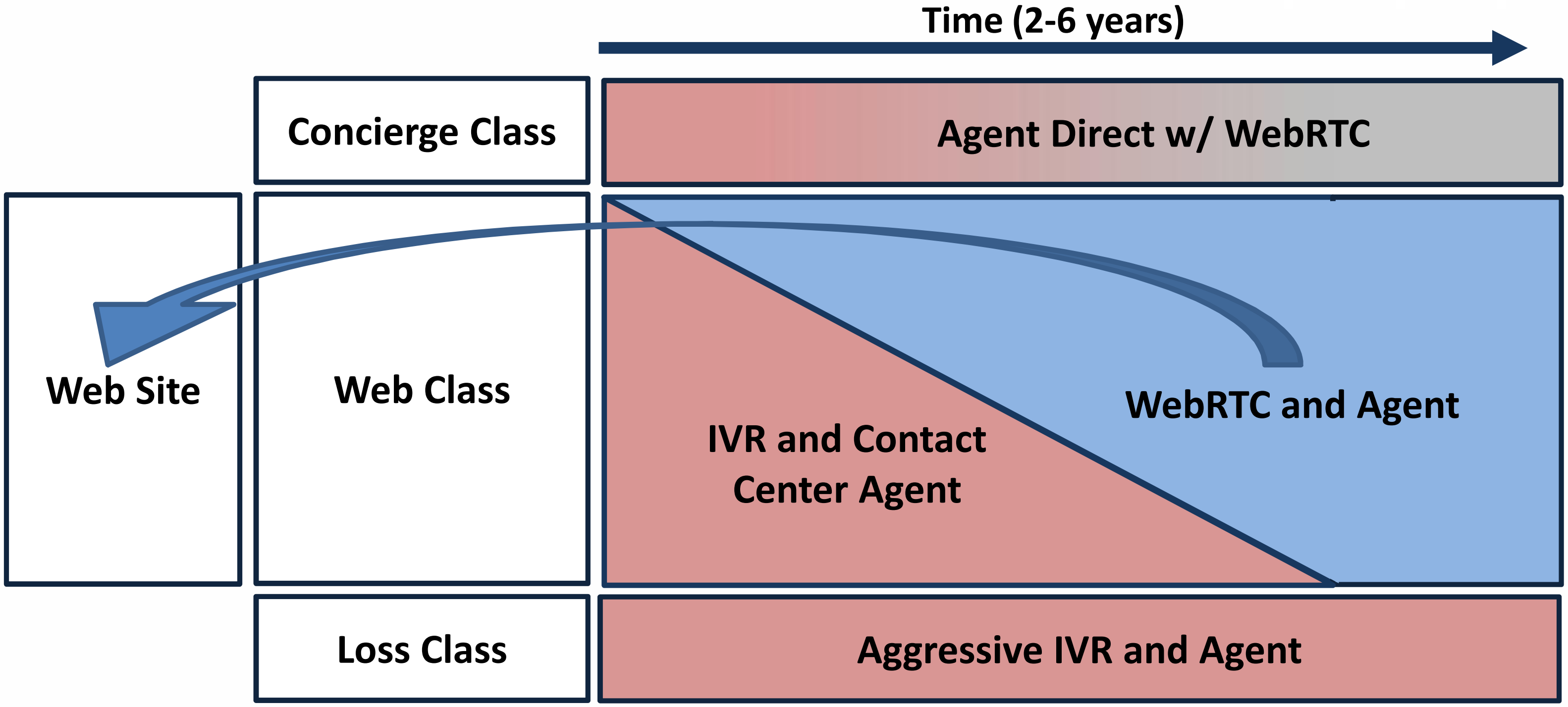
Customer Classes

	Percentage	Description	Outcome
Concierge Class	5-15%	High value Customers	Expectation of direct access to agents
Web Class	70-90%	Self Service Customers	Use the web first and then go to an agent based response
Loss Class	5-15%	Low value non-web Customers	Phone access IVR to Agent

Service Goals

Concierge Class	Always have an agent available – minimal or no IVR
Web Class	Optimize web experience to minimize transitions Use web context to both reduce effort and increase satisfaction Provide feedback from agents to web
Loss Class	Use IVR and other mechanisms to minimize agent impact Reduced concern about satisfaction – loss is OK

Optimizing with WebRTC



Time (2-6 years)

Concierge Class

Agent Direct w/ WebRTC

Web Site

Web Class

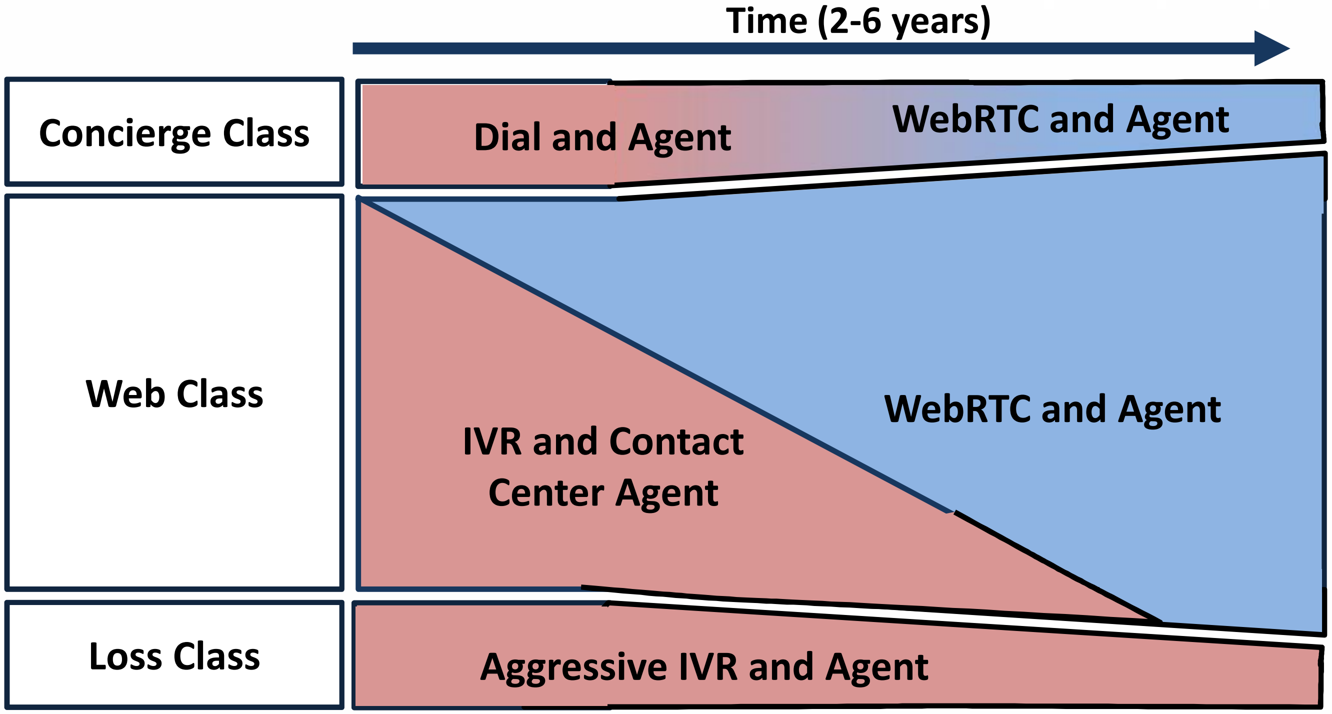
IVR and Contact Center Agent

WebRTC and Agent

Loss Class

Aggressive IVR and Agent

Digital Learning



Time (2-6 years)

Concierge Class

Dial and Agent

WebRTC and Agent

Web Class

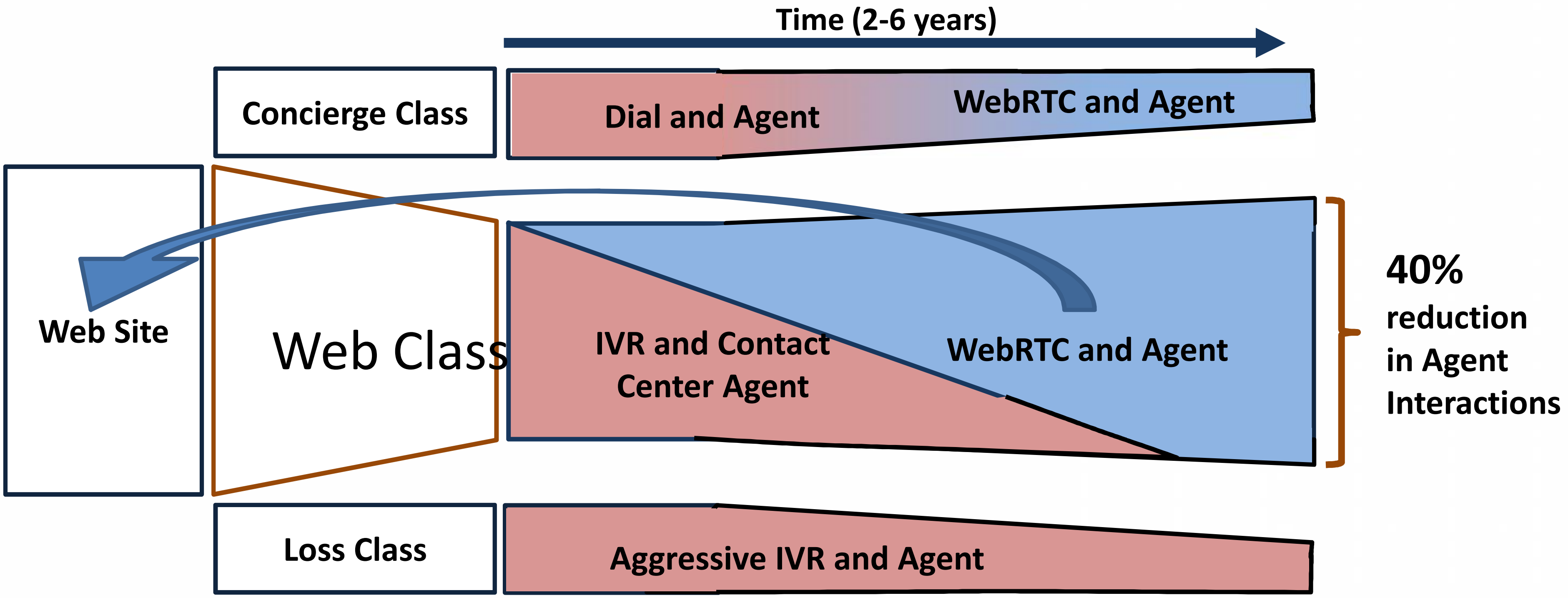
IVR and Contact Center Agent

WebRTC and Agent

Loss Class

Aggressive IVR and Agent

Reducing Agent Interaction



Time (2-6 years)

Concierge Class

Dial and Agent

WebRTC and Agent

Web Site

Web Class

IVR and Contact Center Agent

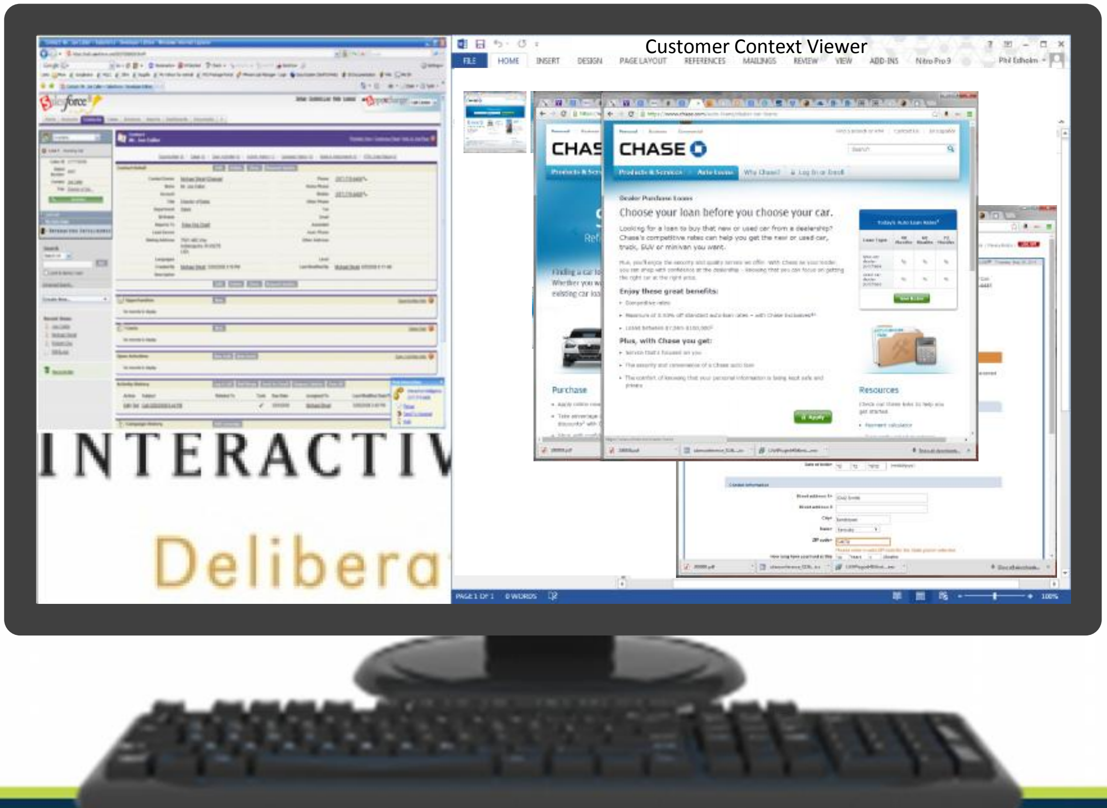
WebRTC and Agent

40%
reduction
in Agent
Interactions

Loss Class

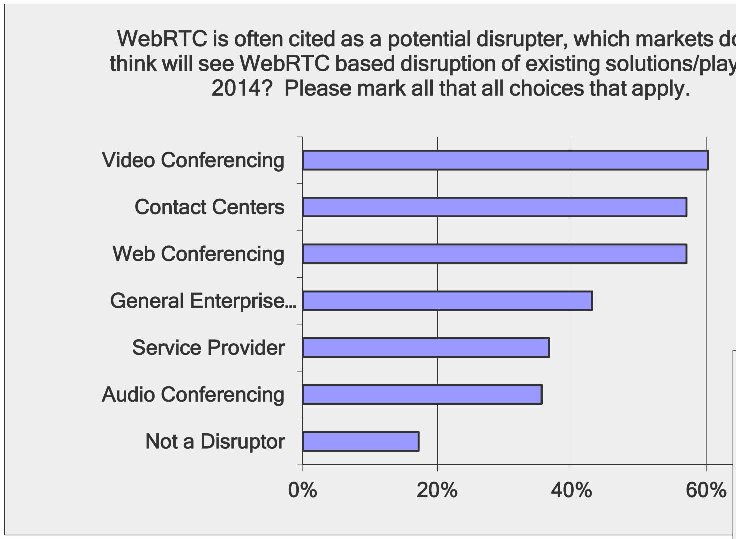
Aggressive IVR and Agent

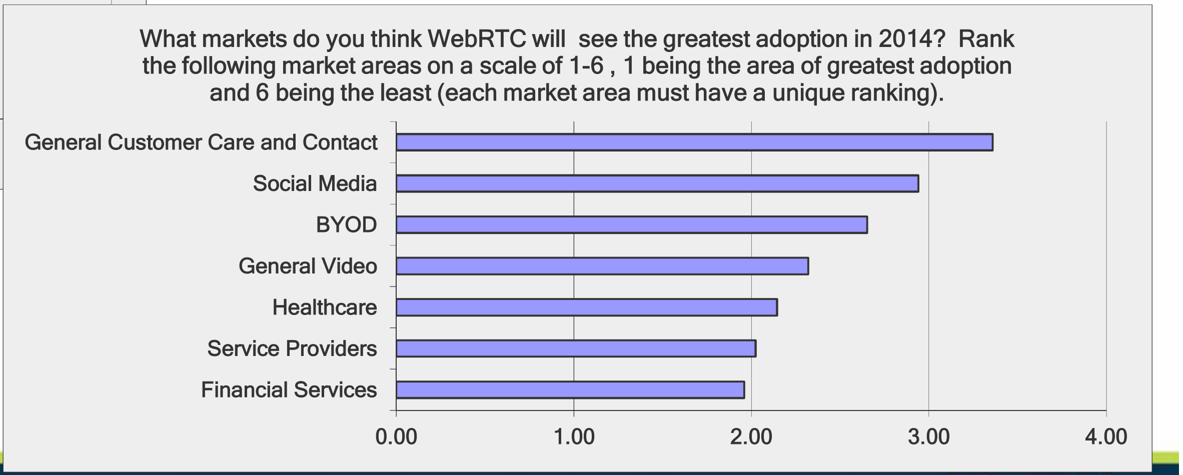
Contextual Interactions


Customer Context Viewer
CHASE
INTERACTIV
Delibera

Where is there WebRTC Focus?

There are over 30 start-ups focused in this area


WebRTC is often cited as a potential disrupter, which markets do you think will see WebRTC based disruption of existing solutions/players in 2014? Please mark all that all choices that apply.


What markets do you think WebRTC will see the greatest adoption in 2014? Rank the following market areas on a scale of 1-6 , 1 being the area of greatest adoption and 6 being the least (each market area must have a unique ranking).

WebRTC World WebRTC Outlook Survey, Dec13
100 Respondents from the WebRTC Community

WebRTC is……

The Web

Money

Dean Material

Q&A

- Phil Edholm
  - PKE Cosnulting LLC
- Dean Bubley
  - Disruptive Analysis

PKE Consulting LLC
Innovate Integrate Transform
Interaction Information Networks

Disruptive Analysis
Don't Assume

Thank You

Please fill out an evaluation of this session

Phil Edholm
President and Principal
PKE Consulting LLC
pedholm@pkeconsulting.com
@PEdholm

Hidden Q&A Slide