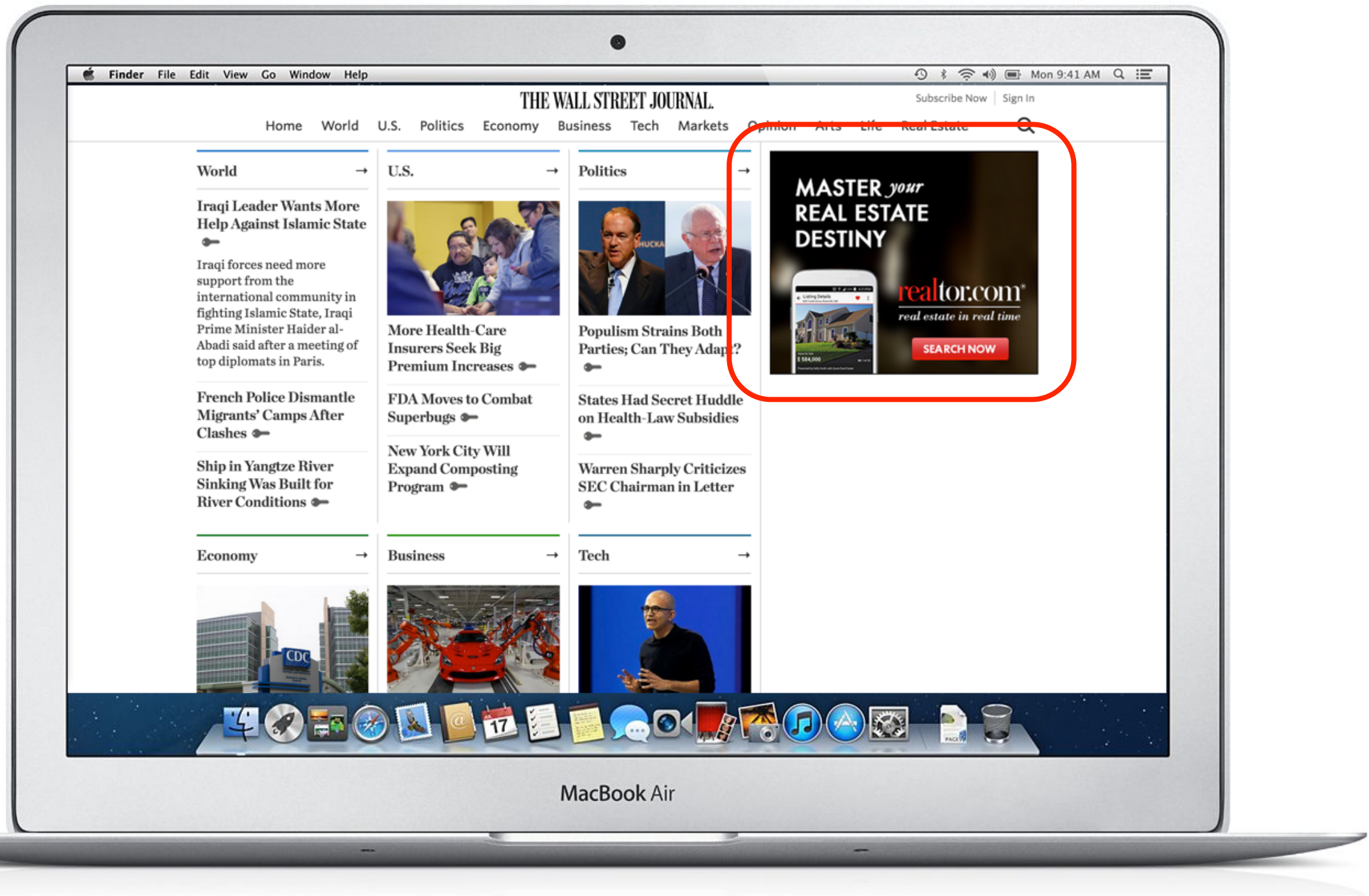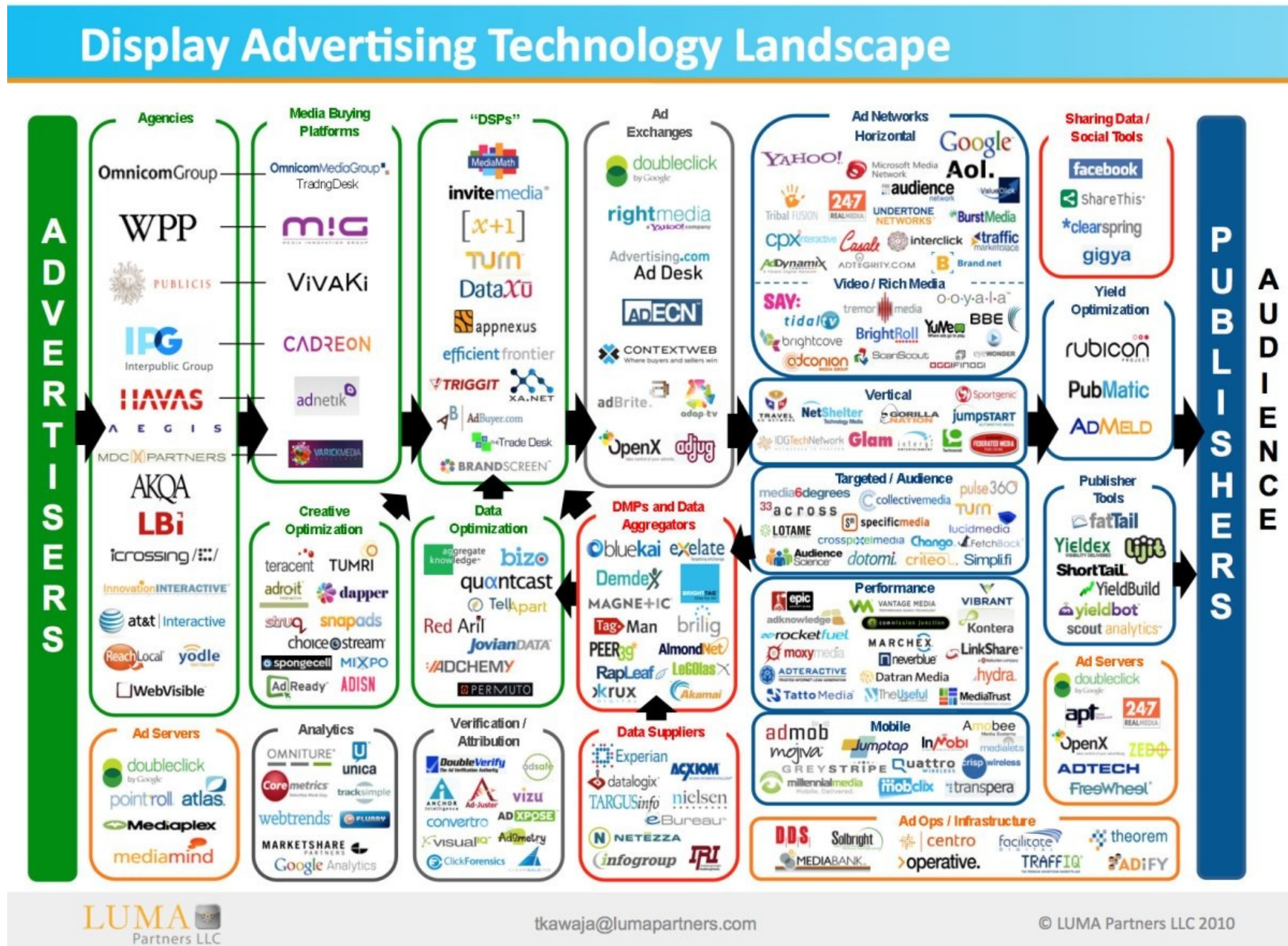# Large-Scale Distributed Systems in Display Advertising

Bartek Bogacki <bartek@roq.ad>

What is Display Advertising?

Technology landscape in Display Advertising

About

50 billion ads

are (approximately) served each day

That equals about

465 TB of data

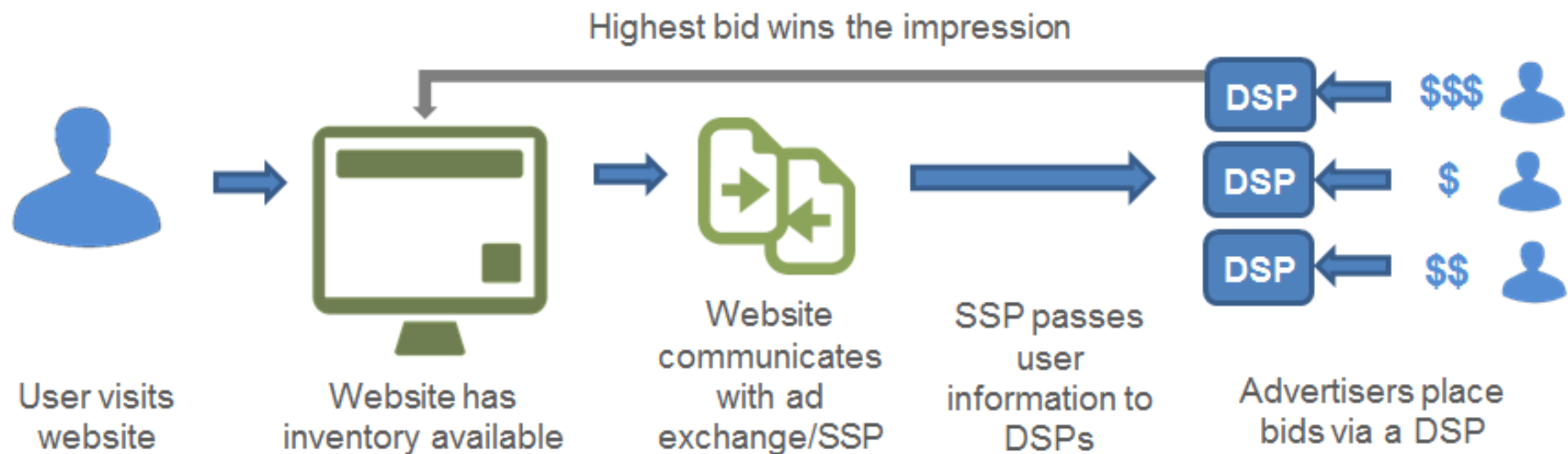moving between 100 advertising platforms across the world each day *

Real-Time Bidding (RTB)

Satoshi Kambayashi

Real-Time Bidding (RTB)

Highest bid wins the impression

DSP ← $$$

DSP ← $

DSP ← $$

User visits website

Website has inventory available

Website communicates with ad exchange/SSP

SSP passes user information to DSPs

Advertisers place bids via a DSP

source: http://blog.mediative.com/en/2015/01/15/rtb-programmatic-direct-private-marketplaces/

RTB
is **high throughput**

500 000 QPS

(Queries Per Second)

for EU

RTB
is **low latency**

Less than

100ms

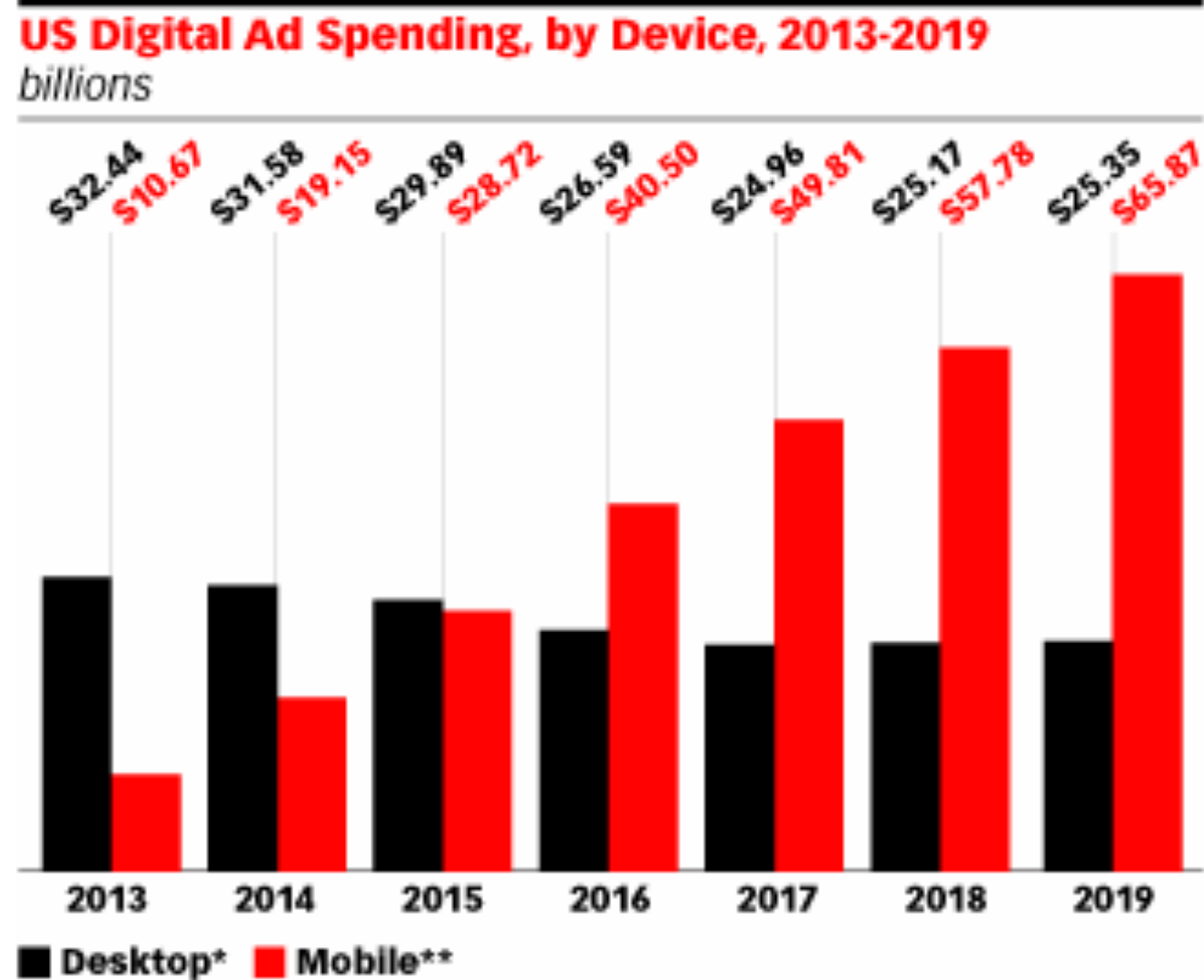to respond per query

RTB
is **Big Data**

over

500 MB

of data

per second

and it grows…

Ad spending 2013-2019

US Digital Ad Spending, by Device, 2013-2019
billions

	2013	2014	2015	2016	2017	2018	2019
Desktop*	$32.44	$31.58	$29.89	$26.59	$24.96	$25.17	$25.35
Mobile**	$10.67	$19.15	$28.72	$40.50	$49.81	$57.78	$65.87

■ Desktop* ■ Mobile**

Note: *includes spending primarily on desktop-based ads; **includes classifieds, display (banners and other, rich media and video), email, lead generation, messaging-based advertising and search; ad spending on tablets is included
Source: eMarketer, March 2015

186555   www.eMarketer.com

What do we do?

ROQ.AD AT A GLANCE:
Matching consumer devices for better marketing campaigns

THE MISSION
We make digital marketing more effective and leverage the advertising power of any kind of consumer device.

THE PRODUCT
We enable advertisers to create «storytelling» campaigns across any screen used by a consumer or family.
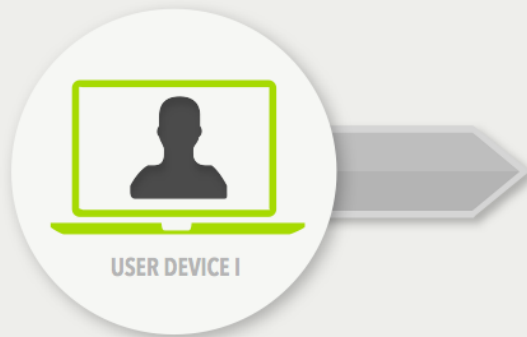
THE TECHNOLOGY
Roq.ad has developed a cross-device unique user recognition technology compliant with EU data privacy laws.

What do we do - sample usage

1 STEP An anonymous user is visiting a website

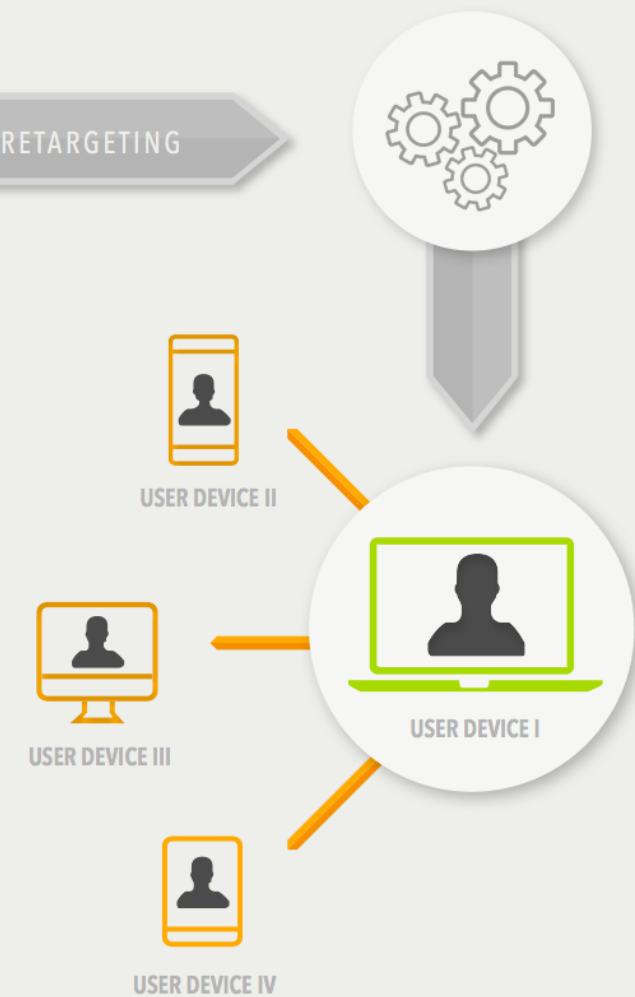**2 STEP** The user is leaving without completing an action

3 STEP We provide information about additional devices

4 STEP The user is retargeted on all devices

USER DEVICE I

Roq.ad

RETARGETING

USER DEVICE II

USER DEVICE III

USER DEVICE I

USER DEVICE IV

Roq.ad

http://roq.ad

join us! :)