Microsoft

Что интересного есть у Microsoft для мобильной разработки в 2018 году

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Microsoft
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Commercial Software Engineering

В чем мы помогаем – всё **бесплатно**:

- Архитектурное планирование
  - *Какие технологии использовать для ваших задач*
- **Совместная** разработка пилотов и прототипов
  - *Снятие технологических рисков*
  - *Проверка реализуемости поставленных задач*

Результат для нас - решения, полезные многим:

- Интересный технический кейс
- Обратная связь для команды разработки
- Код на github (необязательно)
- Совместный PR (необязательно)

Контейнеры и микросервисы

Интернет вещей (IoT)

Виртуальная и дополненная реальность

Машинное обучение и Big-Data

Искусственный интеллект и боты

Бессерверные вычисления

Когнитивные сервисы

Мобильные приложения

Microsoft Teams and Graph API

Трудности жизненного цикла разработки

Знакомые ситуации

- Сроки завершения разработки срываются
- Требования меняются во время разработки
- Сложно и долго находить и устранять баги
- При изменении функционала проявляются старые баги
- Невозможно протестировать приложения на большом количестве разных конфигураций

HockeyApp

Дистрибуция • Поломки • Аналитика

Xa st oud

Тести ание н ус йствах

Xamarin Insights

Поломки • Аналитика

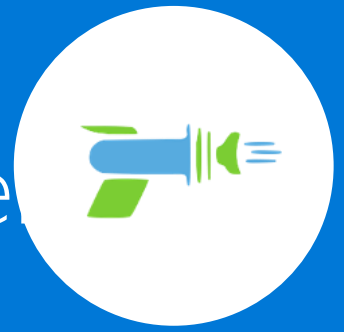
Visual St p Cente

Azure Mobile Engagement

Аналитика • Нотификации

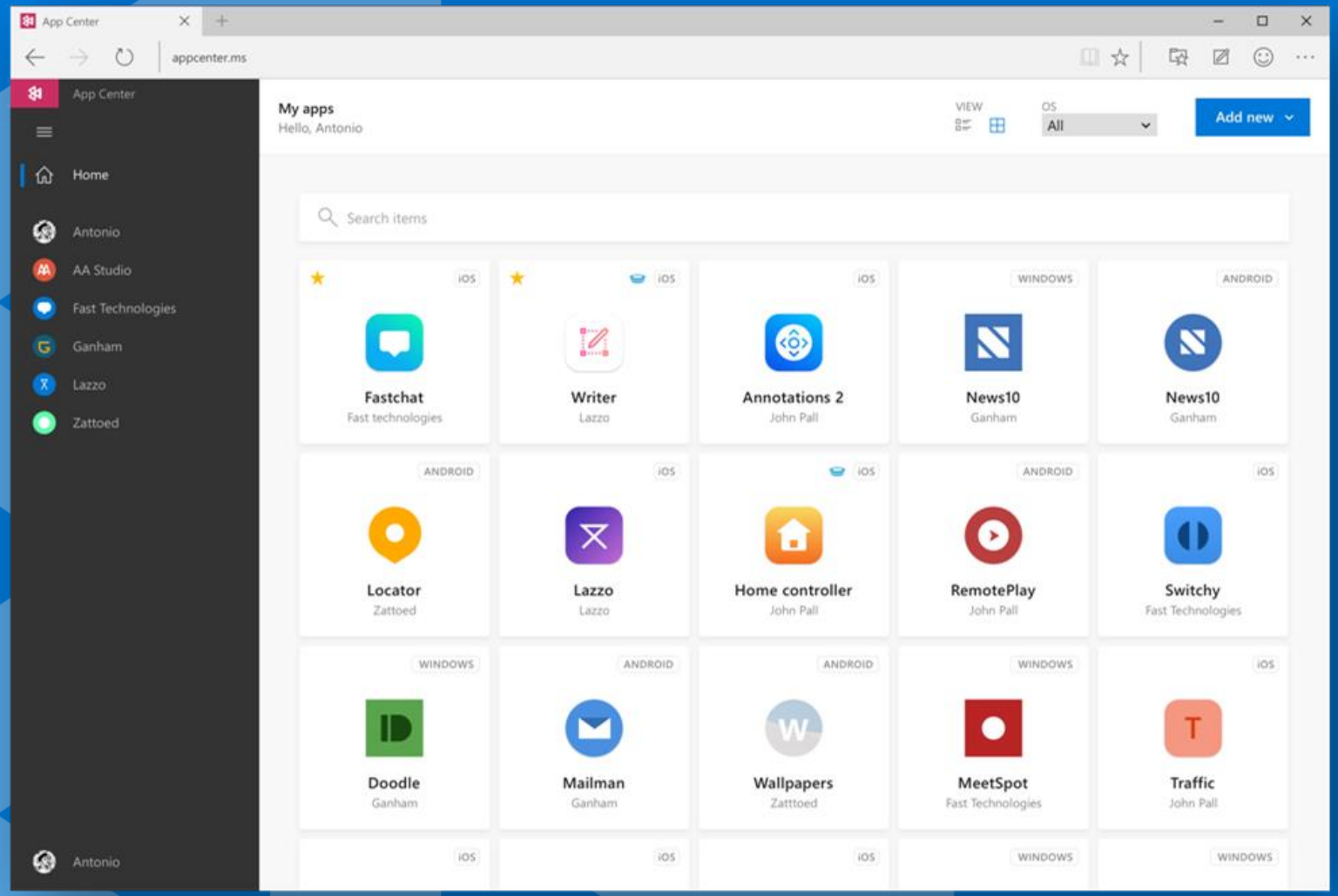
Azure App Service

Таблицы • Аутентификация • Нотификации



CodePush

Дистрибуция



Visual Studio

App Center

appcenter.ms

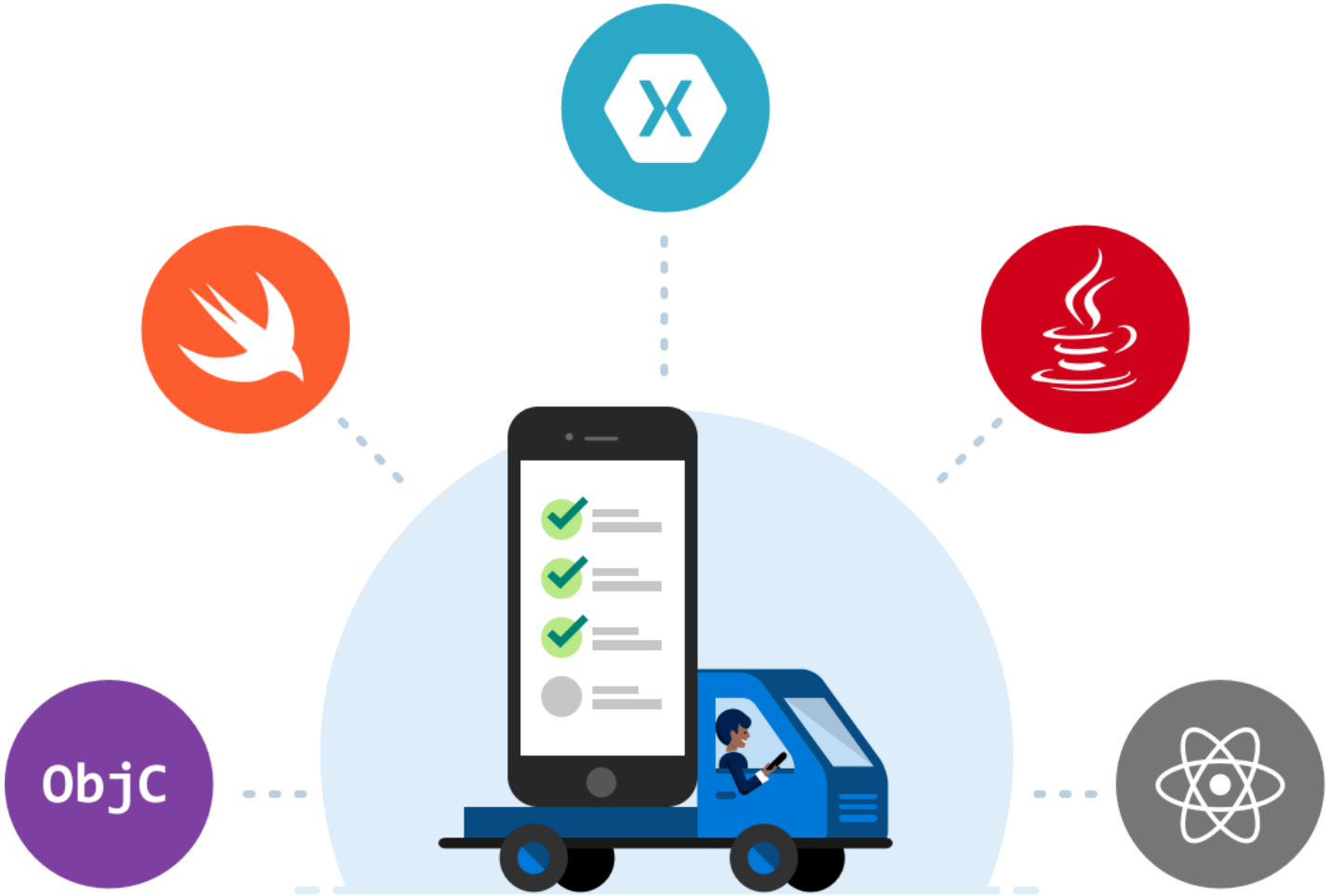
Поддержка основных современных платформ

Платформы

- UWP - Windows
- Android
- iOS
- macOS

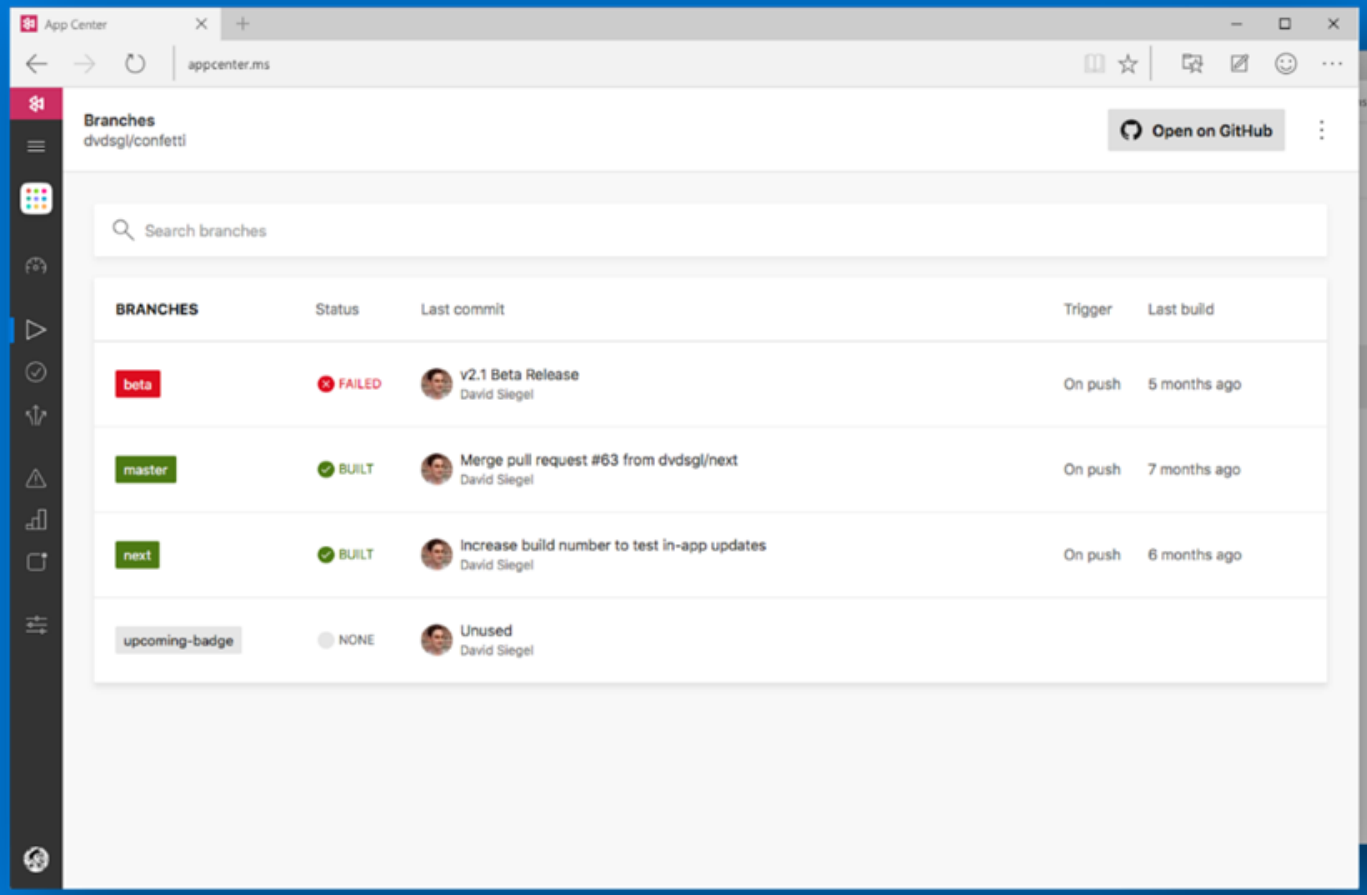
Среды и фреймворки

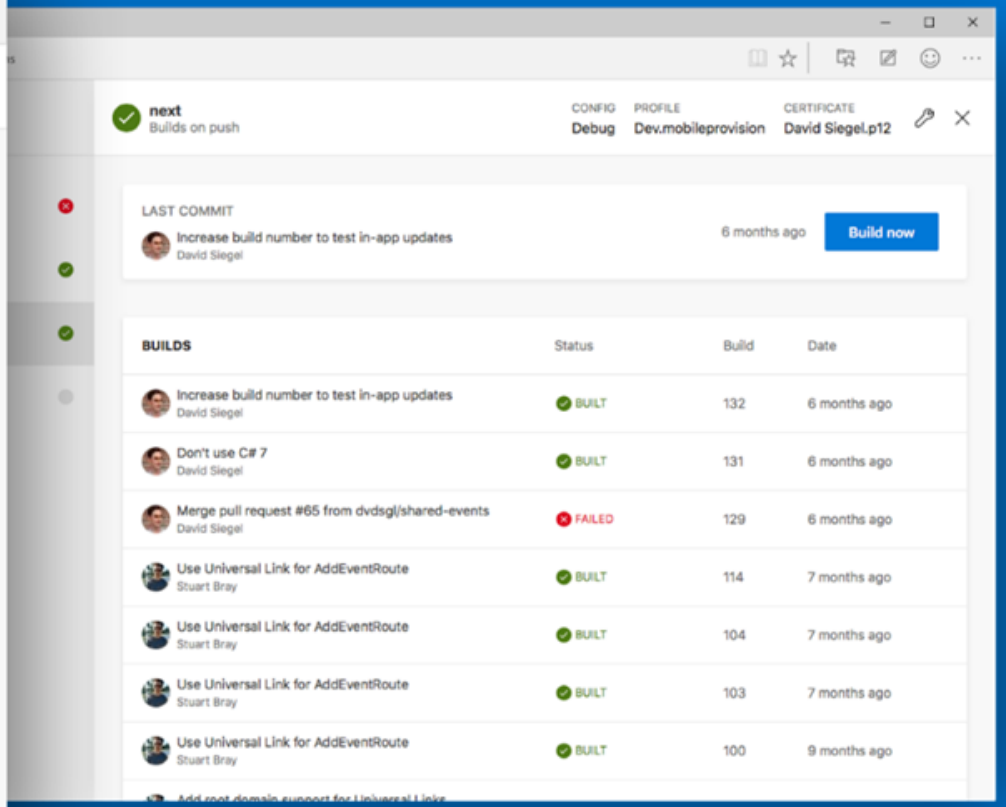
- Xamarin - .NET
- Java
- Obj-C/Swift
- React Native



Visual Studio **App Center** – быстрая сборка приложений

Source Code: VSTS, GitHub, Bitbucket



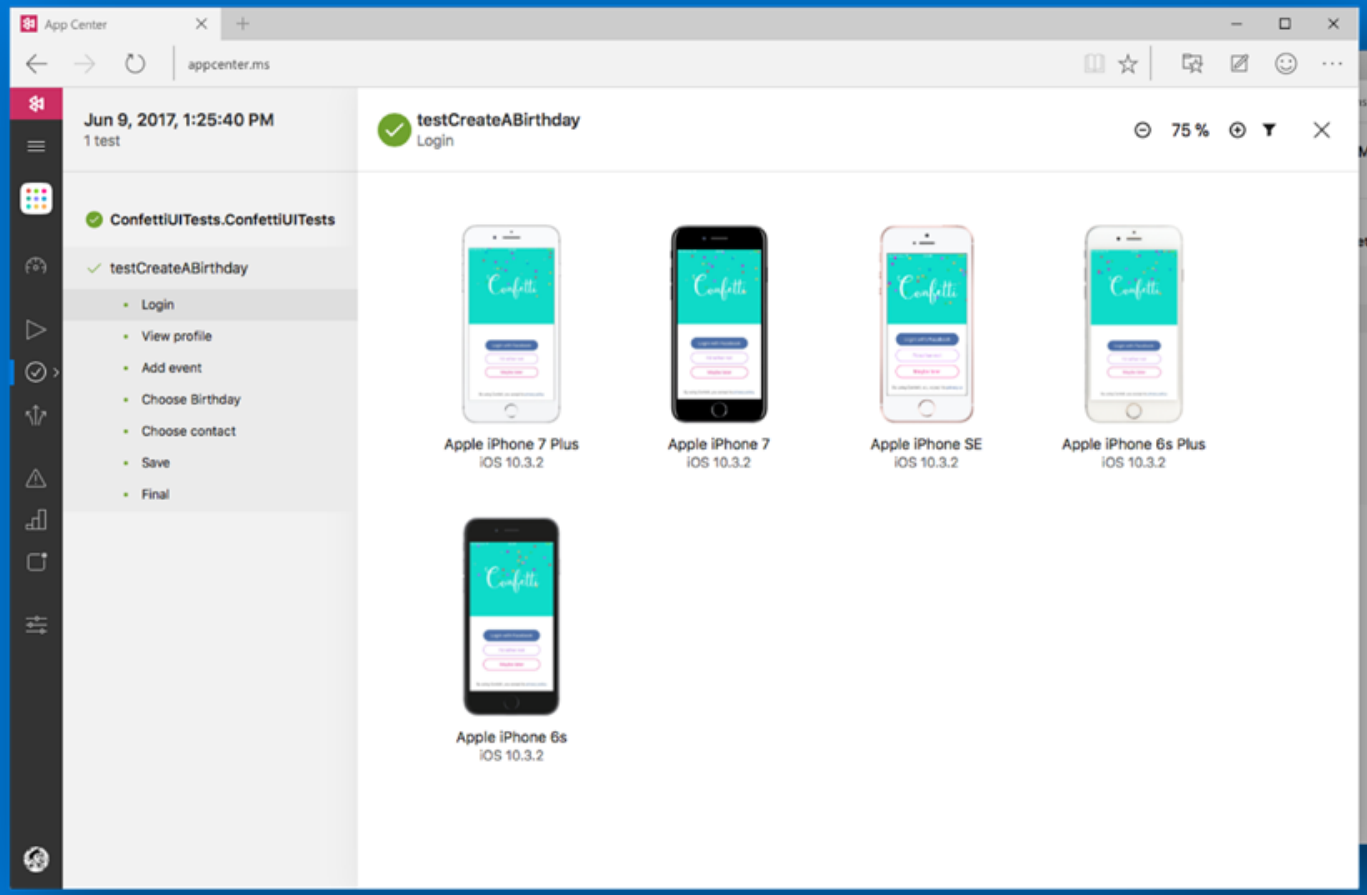


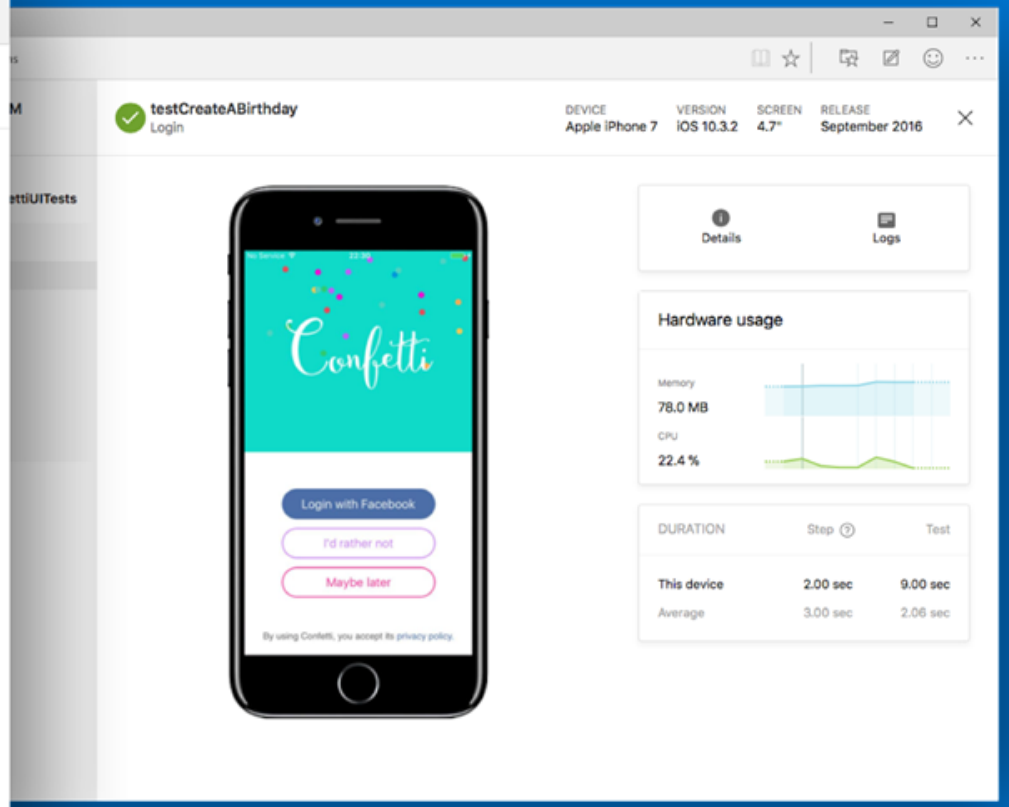
Результат - готовность новых версий в разы быстрее

Build | Test | Distribute | Crashes | Analytics | Push

Visual Studio **App Center** – тестирование на устройствах сотен конфигураций

Test Frameworks: UITest, Appium или нативные Espresso и XCUITest

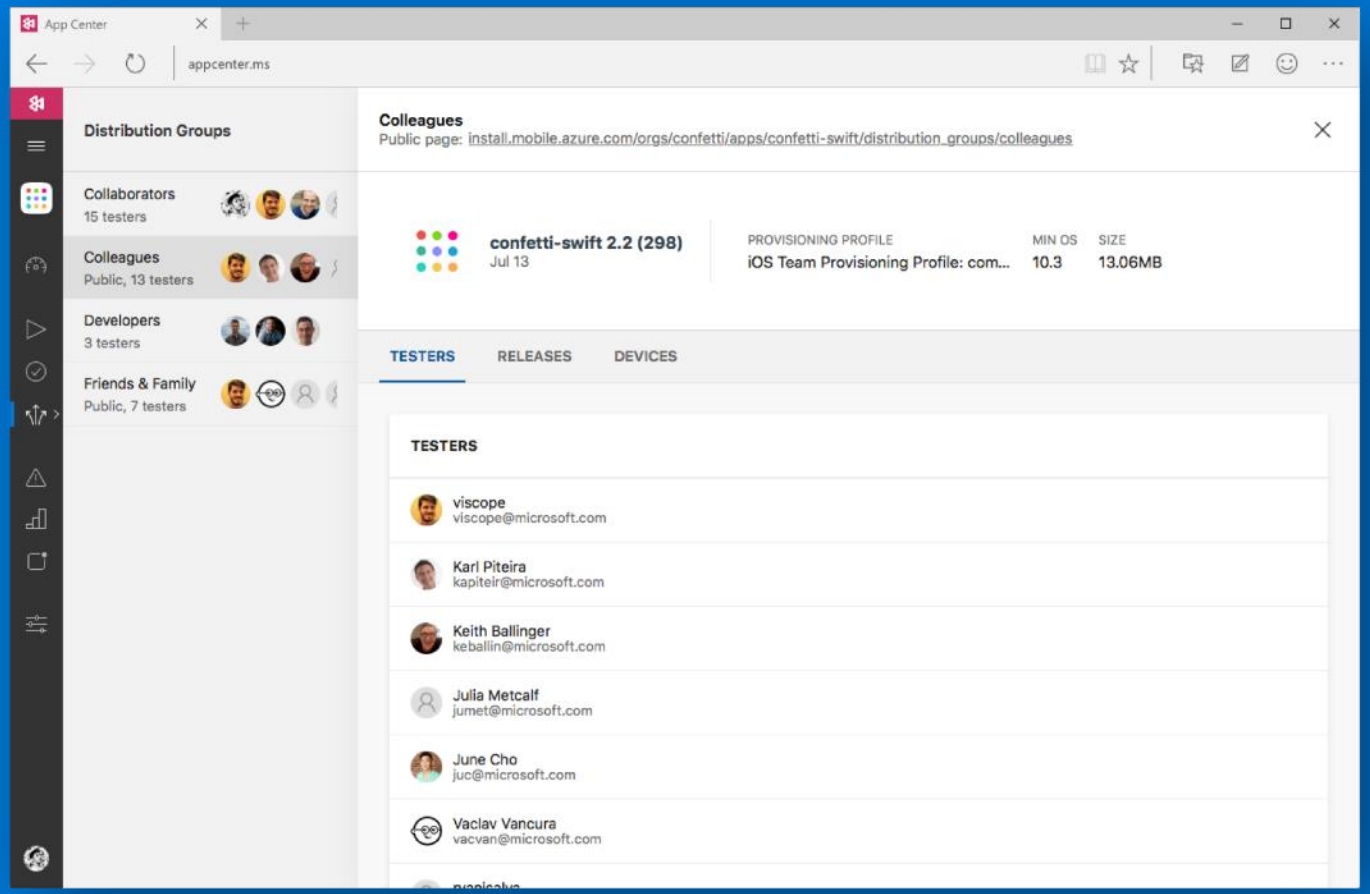




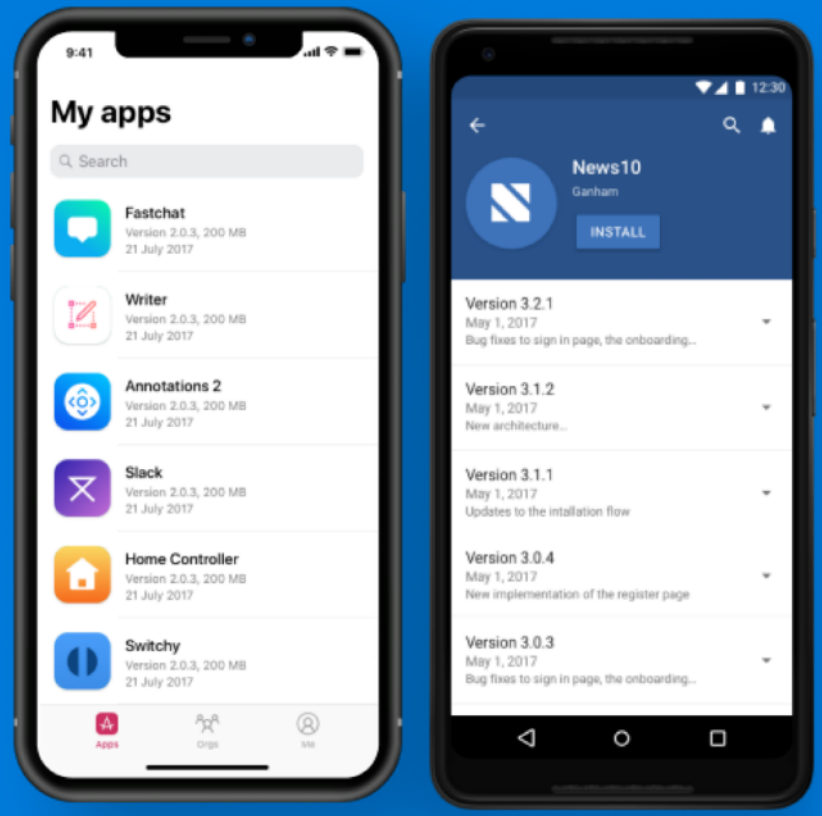
Результат – меньше ошибок и жалоб пользователей

Build | **Test** | Distribute | Crashes | Analytics | Push

Visual Studio **App Center** – дистрибуция бета-тестерам и в магазины



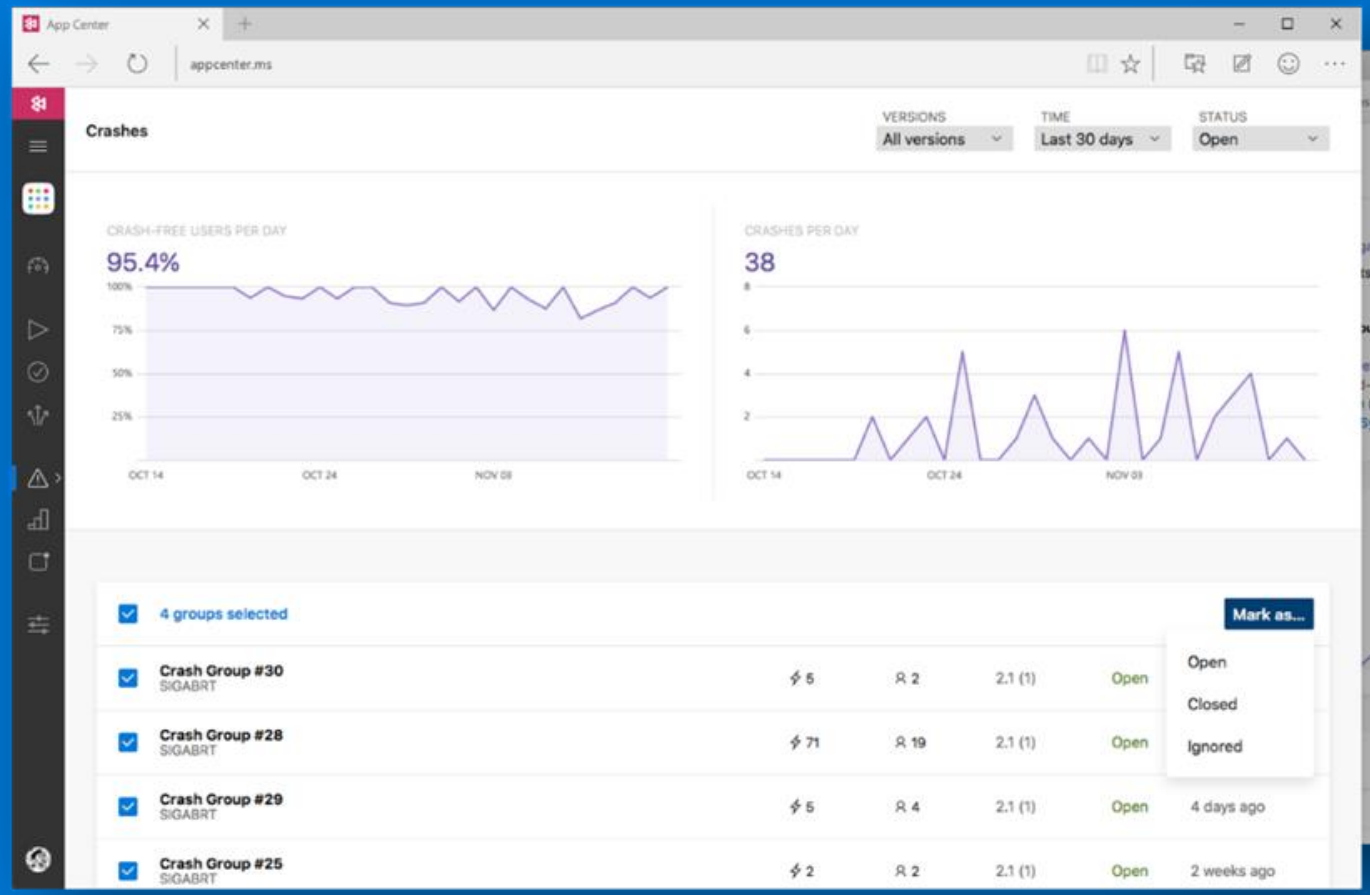
HockeyApp iOS, Android, UWP

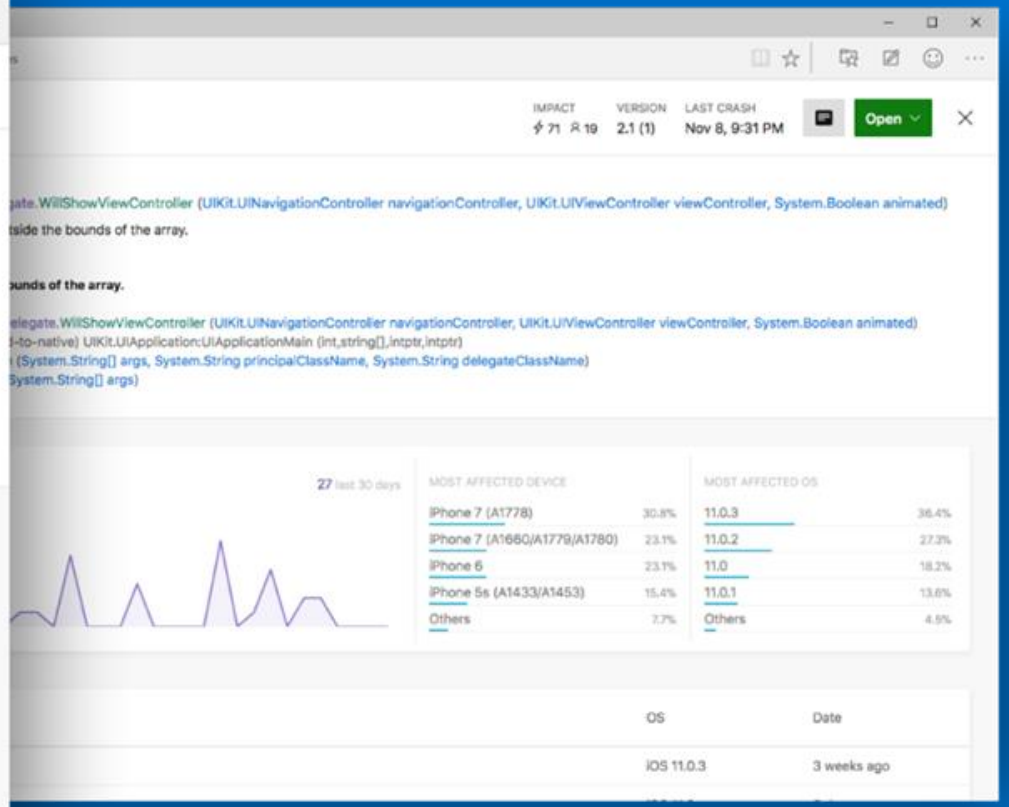


Результат – меньше ошибок и жалоб пользователей

Build Test **Distribute** Crashes Analytics Push

Visual Studio **App Center** – анализ аварийных завершений приложений

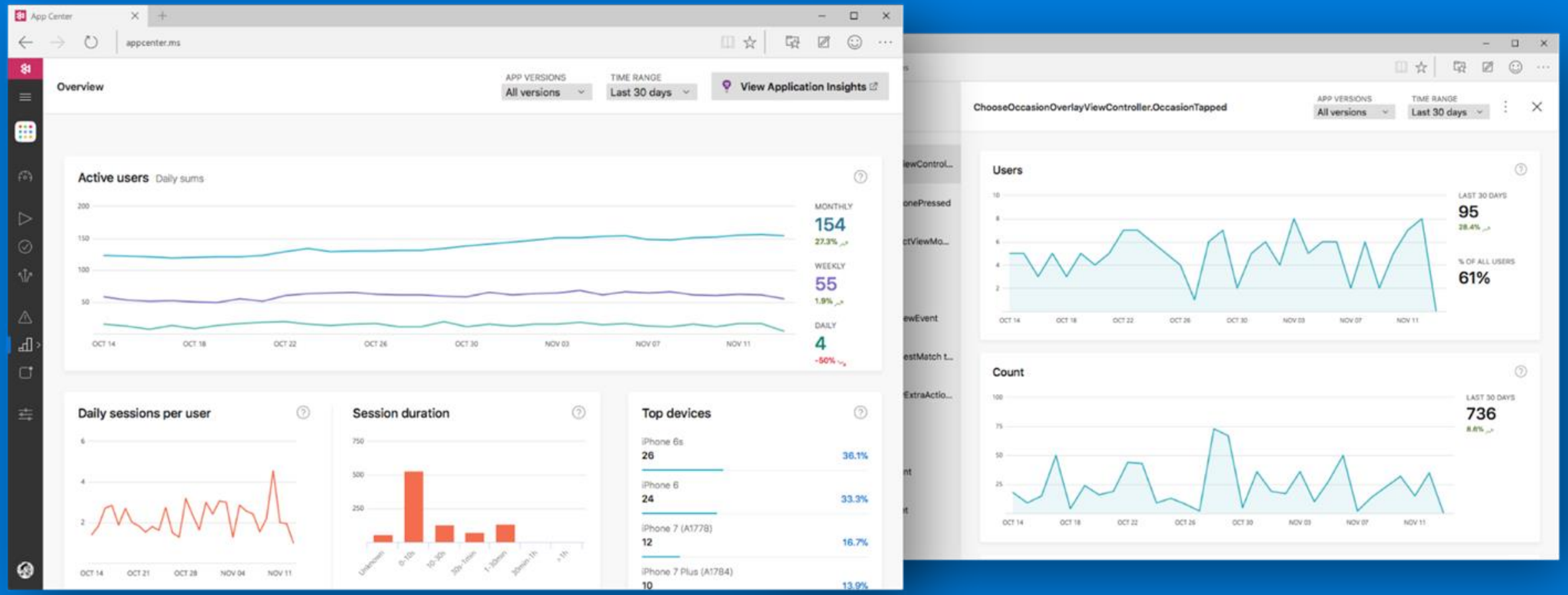




Результат – быстрее обнаружение и исправление ошибок

Build | Test | Distribute | **Crashes** | Analytics | Push

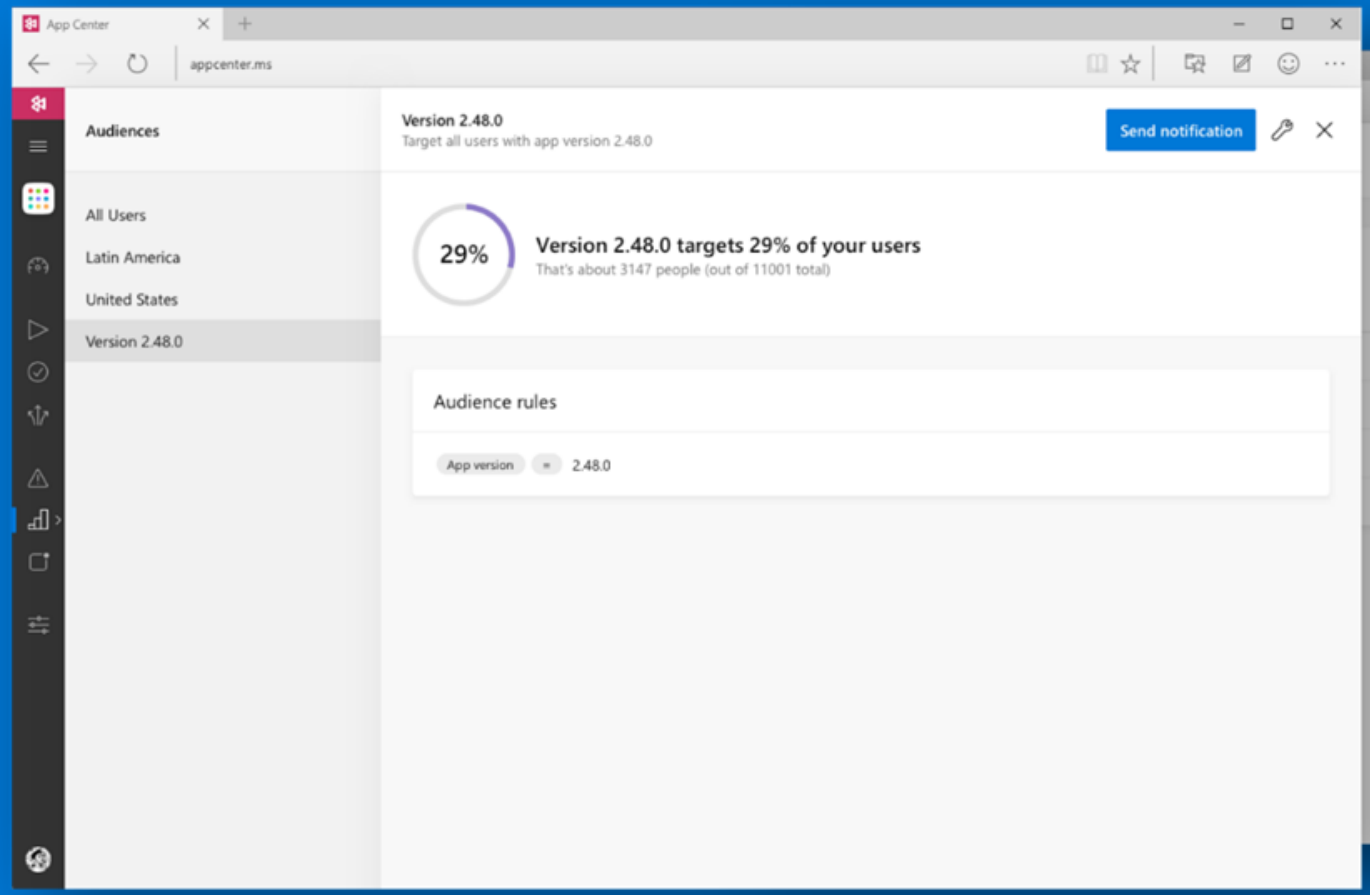
Visual Studio **App Center** – аналитика использования

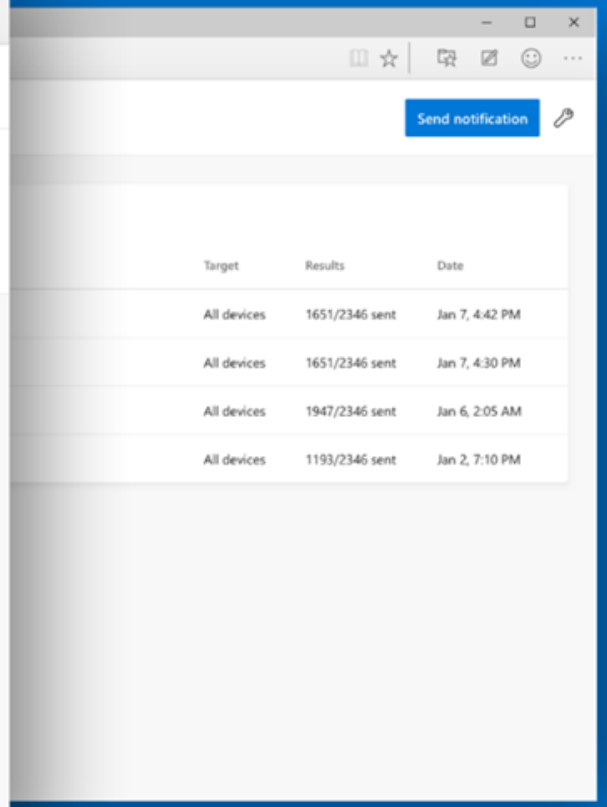


Результат – понимание поведения пользователей и востребованности функционала

Build Test Distribute Crashes **Analytics** Push

Visual Studio **App Center** – адресные коммуникации пользователям





Результат – эффективность маркетинга выше, стоимость ниже

Build Test Distribute Crashes Analytics Push


sky


MINNESOTA
Twins
BASEBALL CLUB


Grab


FOX
SPORTS


vimeo


BBC
goodfood


Quora


Highrise


freshdirect


ring


Payit
PAGA • COBRA

Трудности создания масштабируемого backend для мобильных приложений

Знакомые ситуации

- Долго и дорого создавать инфраструктуру для приложений – большие задержки с запуском
- Большие затраты времени и денег на её обслуживание
- При удачном запуске приложения - сервера не справляются с нагрузкой
- При неудачном запуске приложения – сервера простаивают
- При скачущей нагрузке – обе проблемы вместе
- Инциденты с безопасностью данных …

Ответственность и масштабирование

On-premise – хостинг у себя/в собственном ЦОД

IaaS – использование виртуальных машин

PaaS - использование платформенных сервисов для запуска логики или хранения данных

SaaS – использование готового сервиса, API или пользовательского интерфейса.

Azure – открытое облако

DevOps	Nagios, Vagrant, Grunt, Gradle, Clients, Xamarin, Apache Cordova
Управление	Chef, puppet labs, Ansible, SaltStack, mist.io, libcloud, Scalr Cloud Management
Приложения	Joomla!, Drupal, PaaS & Devops, Cloud Foundry, OpenShift, apprenda, Jelastic
App frameworks и инструменты	php, nodeJS, python, Java, Ruby, IntelliJ IDEA, eclipse
Базы данных и middleware	hadoop, redis, cleardb, cloudera, MySQL, Hortonworks, mongoDB, Couchbase, DataStax
Инфраструктура	redhat, suse, bitnami, Canonical, Oracle Linux, FreeBSD, docker

Глобальное покрытие Azure

больше всех крупнейших облачных провайдеров

50 regions worldwide

140 available in 140 countries

https://azure.microsoft.com/en-us/regions/

Infrastructure (IaaS) масштабирование ручное/авто

Виртуальные машины

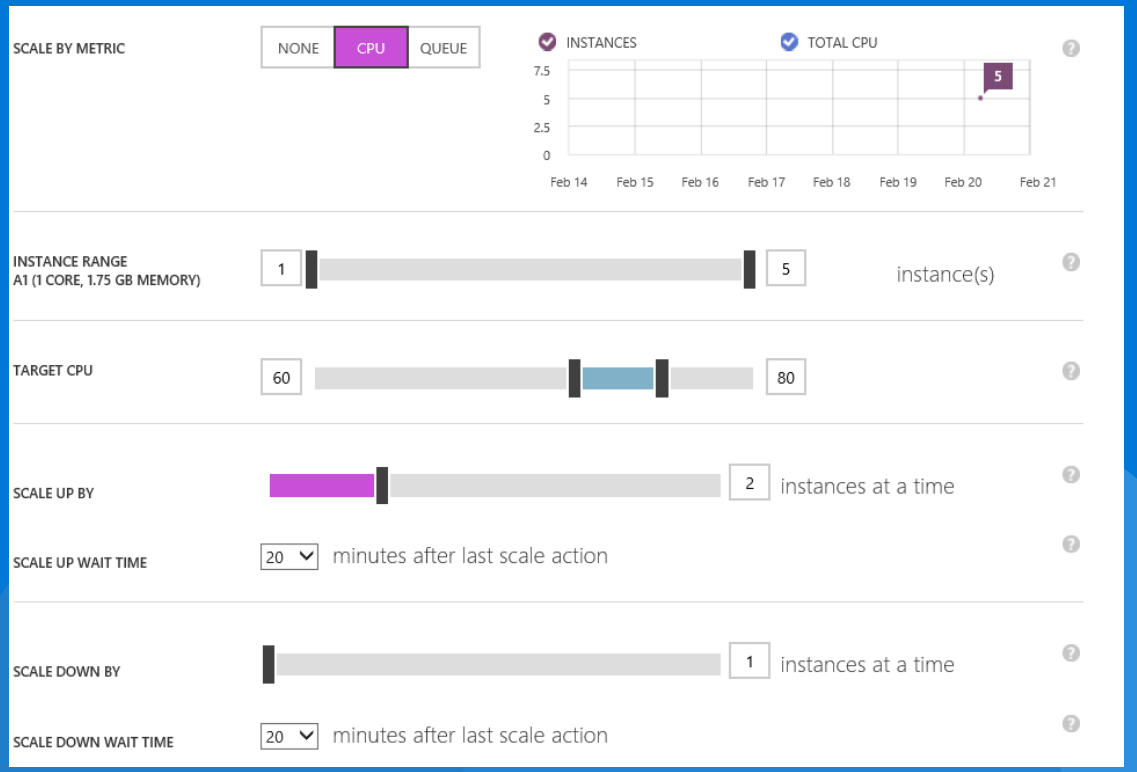
Образы Windows Server и Linux ОС

Virtual Machine ScaleSets

Механизм масштабирования stateless VMs с помощью ползунка/настройки

Container Service

Оркестрирование Docker-образов в рабочей среде

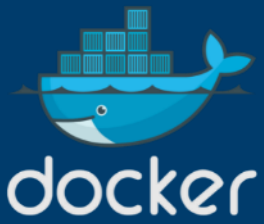


Контейнеры в Azure

Поддержка
Docker для Azure VMs

PaaS на базе контейнеров

Azure Container Service



Управление контейнерами

Microsoft Azure

Azure Application Platform – бесконечное масштабирование

Создание логики на платформенных сервисах (PaaS)

App Service

Web, mobile, API,
и приложения логики

Service Fabric

Облачные
микросервисные
приложения

Functions

Бессерверные функции на
базе событий

Cloud Services

Собственные монолитные
3-уровневые stateless
приложения

Другие PaaS

Cloud Foundry, OpenShift,
Apprenda, Jetlastic, etc.

Web и mobile	Microservices Микросервисы	Serverless Compute Бессерверные вычисления	Существующие Frameworks	Third-party Frameworks

Azure PaaS сервисы хранения данных

Blobs
Масштабируемое облачное объектное хранилище (REST)

Tables
Авто-масштабируемое NoSQL хранилище

Queues
Надежная масштабируемая доставка сообщений

Disks
Постоянные диски для Azure IaaS VMs"

Files
"SMB доступ к Azure Storage"

Доступно в Windows & Linux VMs

Data Lake
Big Data аналитика с поддержкой HDFS

Cosmos DB
NoSQL БД планетарного масштаба с MongoDB API

Service Bus
Надежные сообщения в облаке как сервис

Redis cache
"High throughput, consistent low-latency data access"

Azure Search
Облачное индексирование и мгновенный поиск

Azure SQL DB + Instance
Управляемая реляционная SQL БД

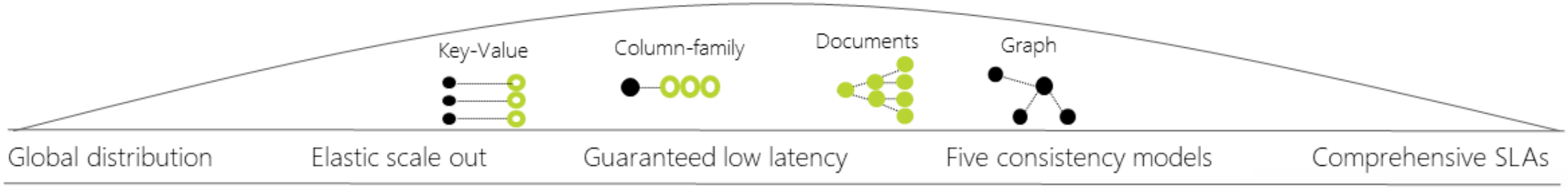
SQL Data Warehouse
Эластичное хранилище данных как сервис

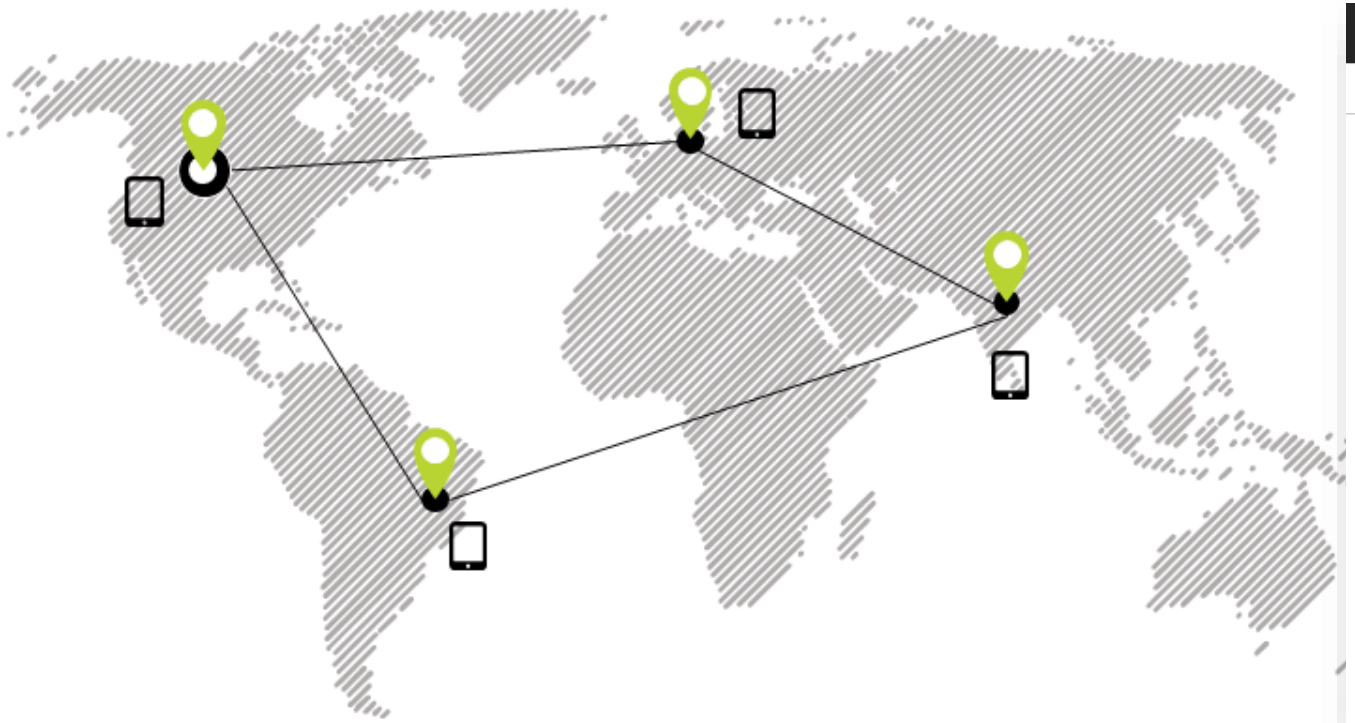
Azure DB MySQL
Управляемая MySQL БД (preview)

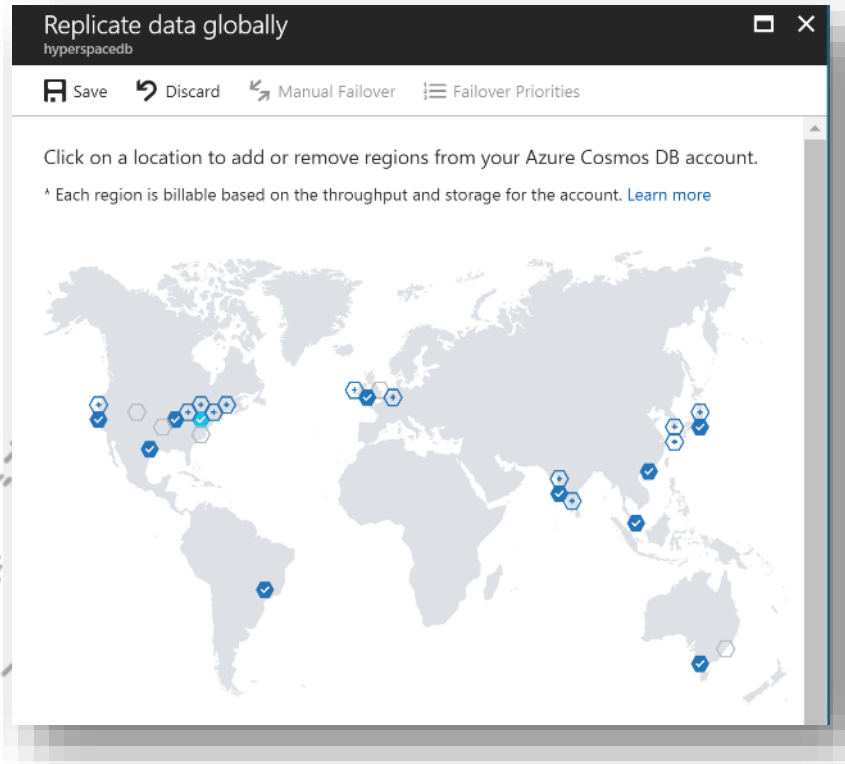
Azure DB PostgreSQL
Управляемая PostgreSQL БД (preview)

Azure DB MariaDB
Управляемая MariaDB БД (preview)

Azure Cosmos DB



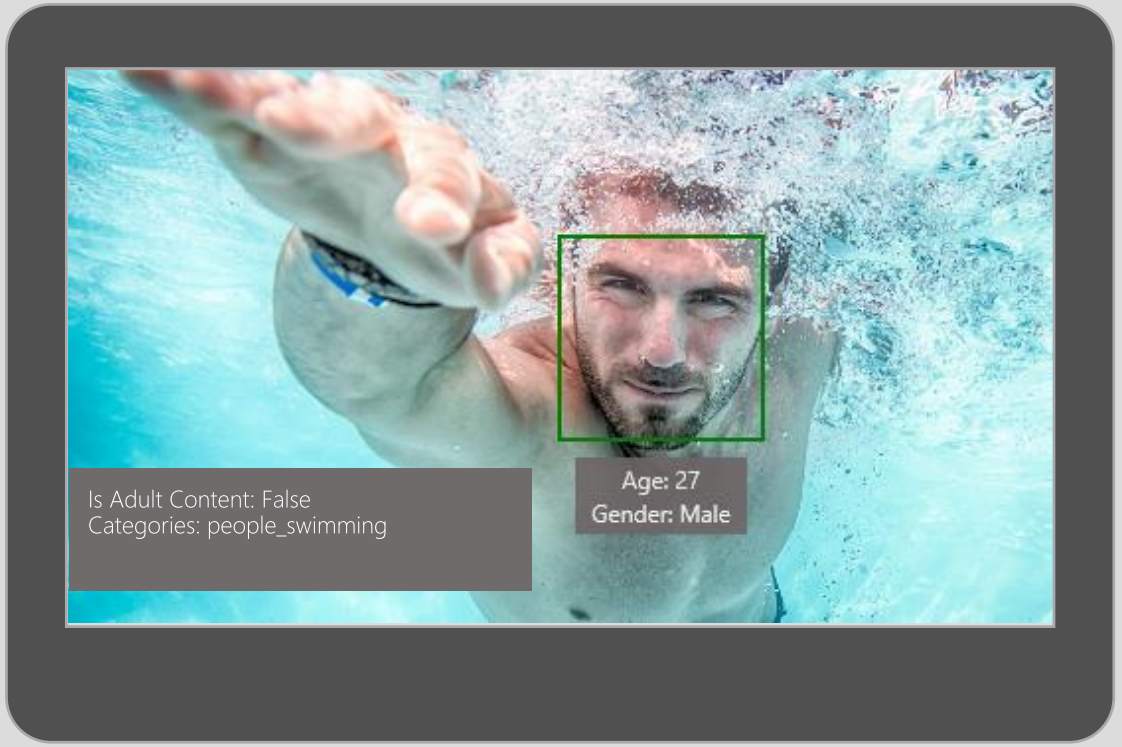




APIs: MongoDB, DocumentDB SQL, Cassandra API (preview), Gremlin (preview), and Azure Table API

Использование искусственного интеллекта

Когнитивные сервисы
Cognitive services

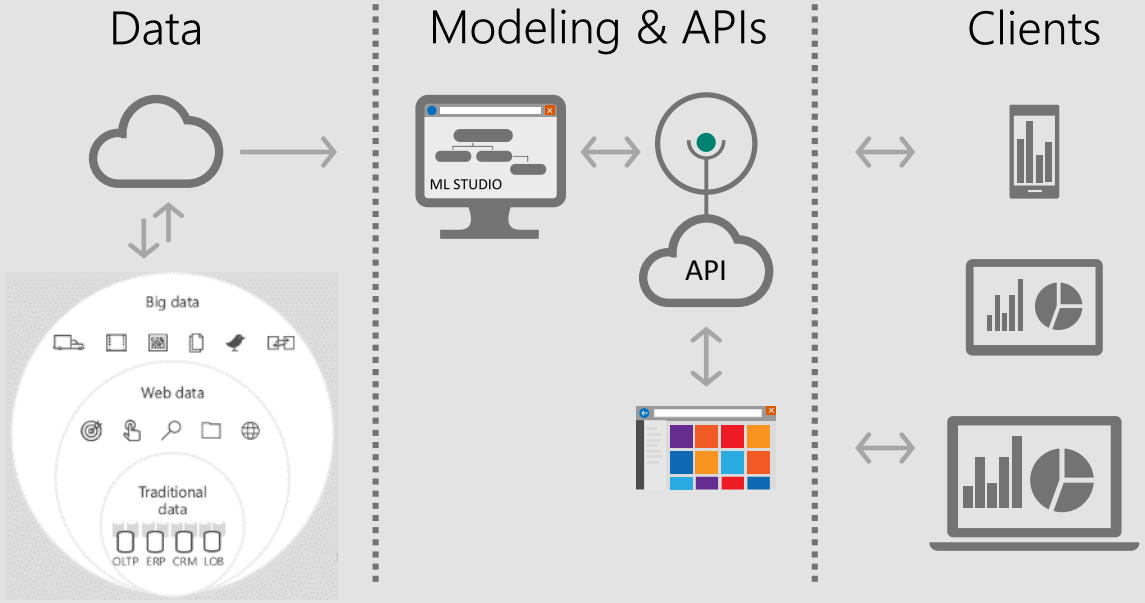


Bot framework

Принятие решений на базе данных

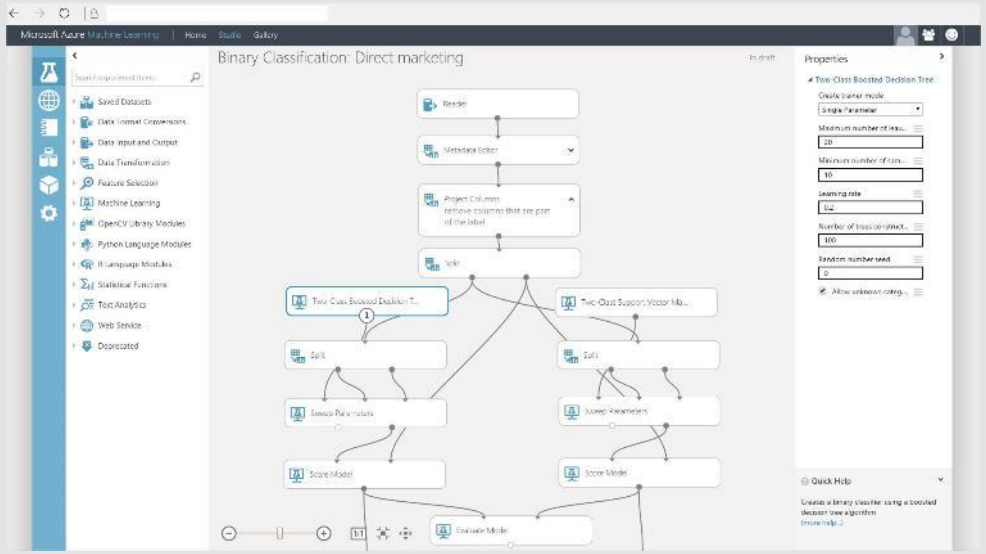
- Предсказание поведения
- Построение искусственного интеллекта (artificial intelligence)

Azure Machine Learning service



Клиентская визуализация

Azure ML Studio



Трудности разработки одновременно под несколько платформ

Знакомые ситуации

- Нужно иметь отдельные команды разработки под каждую платформу
- Одну и ту же логику приложения приходится программировать несколько раз
- Разработка обходится дороже и занимает больше времени – несколько команд.
- Иногда её реализовывают несколько по разному для каждой платформы = баги
- Каждый баг надо исправлять несколько раз
- Иногда баги исправляют разные команды по разному = новые баги

Нативный интерфейс

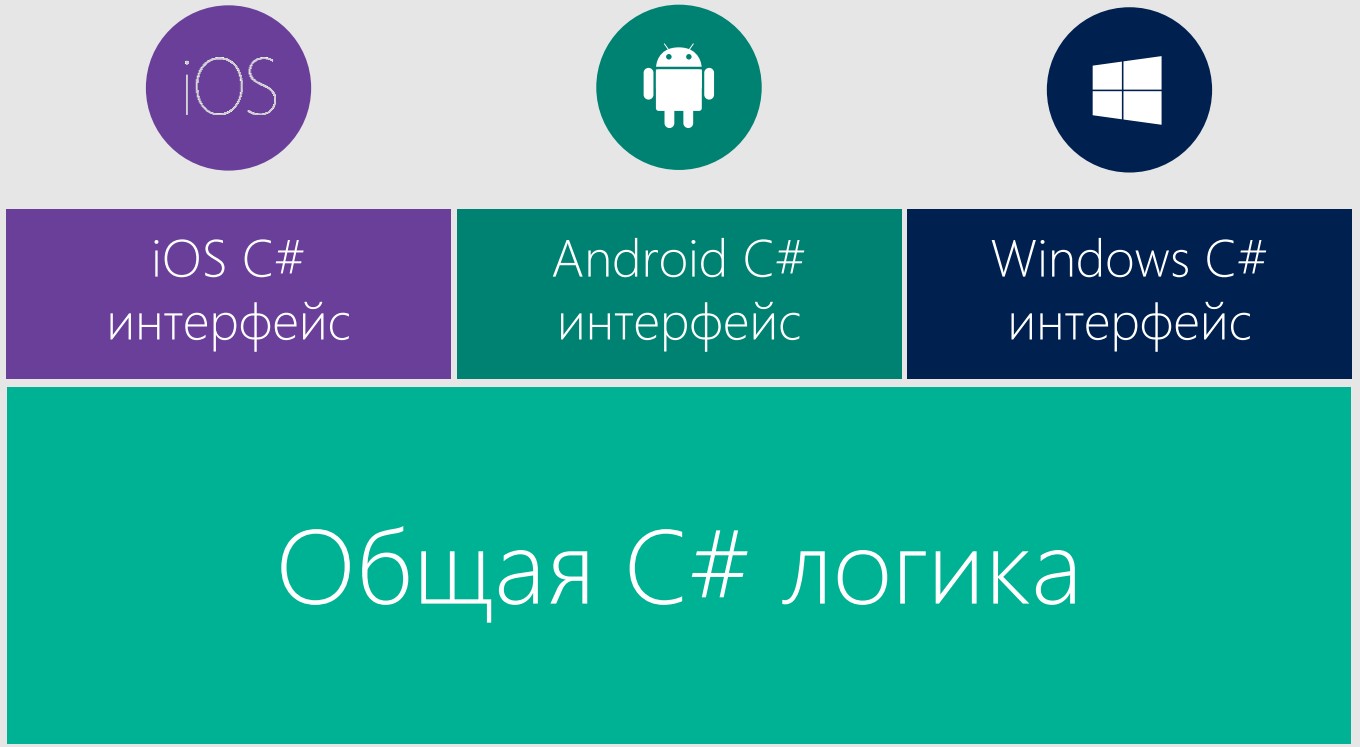
Нативные API

Нативная скорость

Фреймворки на основе веб технологий

Ограниченный доступ к API • Медленно • Неудобный интерфейс

Подход Xamarin Classic/Native



Общий C# код • 100% доступ к нативным API • Высокая производительность

✓ Всегда доступ к актуальным API

Доступность в день выпуска:

- iOS 5
- iOS 6
- iOS 7
- iOS 8
- iOS 9
- iOS 10
- iOS 11

Полная поддержка:

- Apple Watch
- Apple TV
- Android Wear
- Amazon Fire TV
- Google Glass
- и многих других

Сравнение производительности нативных приложений и приложений Xamarin

Most likely, users won't be able to tell the difference between native code and Xamarin.iOS or Xamarin.Android. Too many factors impact user experience. Low connection speed combined with the poor backend is the main source of annoyance among app users. Only a small portion of UX problems are related to installed apps directly. It's worth mentioning that a human can perceive and recognize performance delays above 500 ms. We tested both simple and complicated operations and most of them stay within or below this benchmark.

https://www.altexsoft.com/blog/engineering/performance-comparison-xamarin-forms-xamarin-ios-xamarin-android-vs-android-and-ios-native-applications/

ARM, Samsung Galaxy Note 2, power saving off, Android 4.1.1

Xamarin:
Grand total time (5 runs): 6201 ms, with file reading total: 6476 ms

Java:
Grand total time (5 runs): 7141 ms, with file reading total: 7479 ms

https://stackoverflow.com/questions/17134522/does-anyone-have-benchmarks-code-results-comparing-performance-of-android-ap

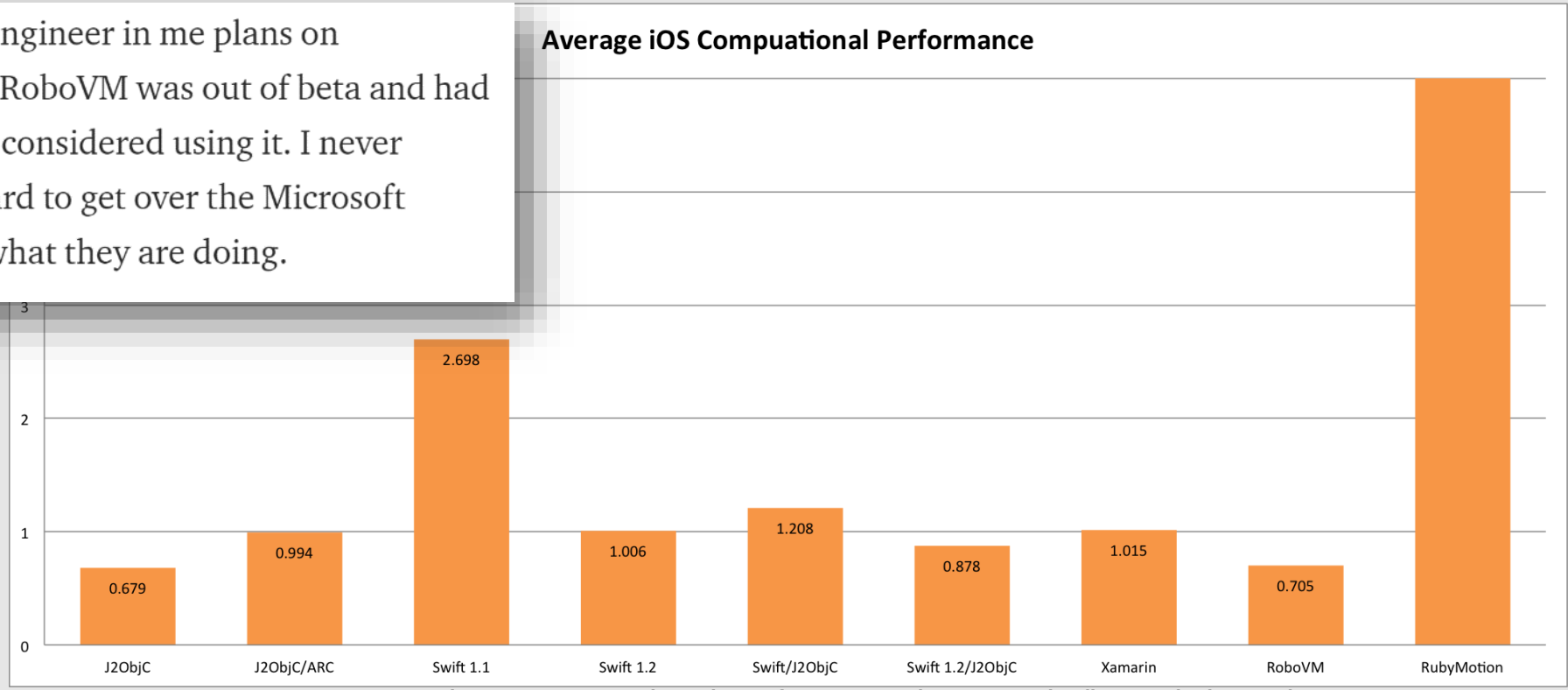
⊕ Performance Close to Native

Unlike traditional hybrid solutions, based on the web technologies, a cross-platform app built with Xamarin, can still be classified as native. The performance metrics are comparable to those of Java for Android (as explained here) and Objective-C or Swift for native iOS app development. Moreover, Xamarin performance is constantly being improved to fully match the standards of native development. Xamarin

https://www.altexsoft.com/blog/mobile/the-good-and-the-bad-of-xamarin-mobile-development/

https://medium.com/@harrycheung/cross-platform-mobile-performance-testing-d0454f5cd4e9

Having said that, the performance-minded engineer in me plans on developing the rest of my app in Xamarin. If RoboVM was out of beta and had better support for storyboards, I would have considered using it. I never thought I would be a C# developer as it is hard to get over the Microsoft stigma, but alas, these Xamarin guys know what they are doing.



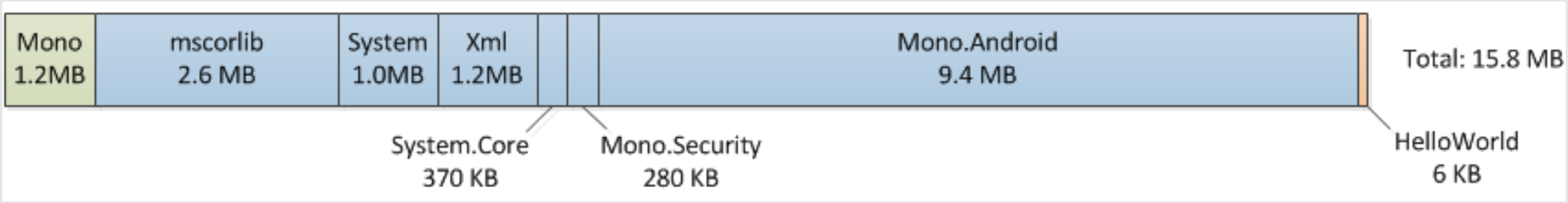
Average iOS Computational Performance in seconds (lower is better)

	J2ObjC	J2ObjC/ARC	Swift 1.1	Swift 1.2	Swift 1.1/J2ObjC	Swift 1.2/J2ObjC	Xamarin	RoboVM	RubyMotion
Launch	17.83 MB	17.84 MB	18.51 MB	17.45 MB	17.91 MB	17.90 MB	9.96 MB	3.63 MB	19.90 MB
Peak	18.17 MB	18.29 MB	19.09 MB	17.90 MB	18.80 MB	18.73 MB	10.06 MB	3.67 MB	21.95 MB
Settle	18.10 MB	18.27 MB	18.77 MB	17.53 MB	18.48 MB	18.23 MB	10.12 MB	3.64 MB	21.75 MB
Total	973.59 MB	895.85 GB	901.15 MB	104.99 MB	980.52 MB	964.53 MB	147.49 MB	29.97 MB	5.49 GB
Run time	14.219 s	23.052 s	67.262 s	1.6 s	25.560 s	15.401 s	4.28 s	4.108 s	606.589 s

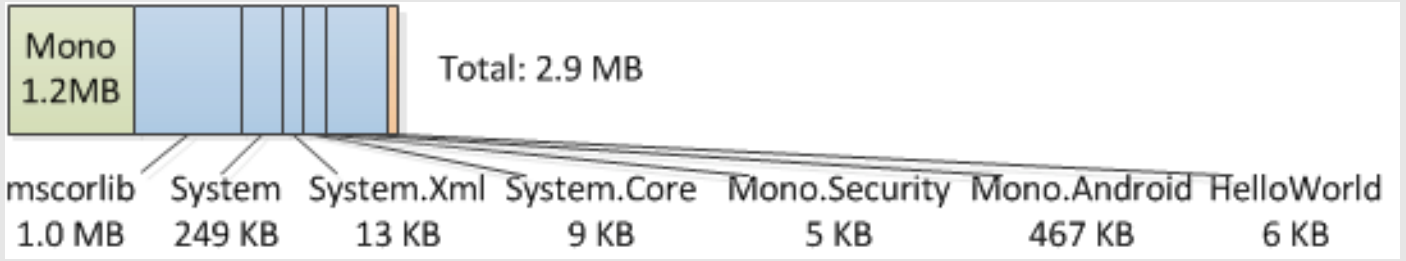
iOS Memory Performance table

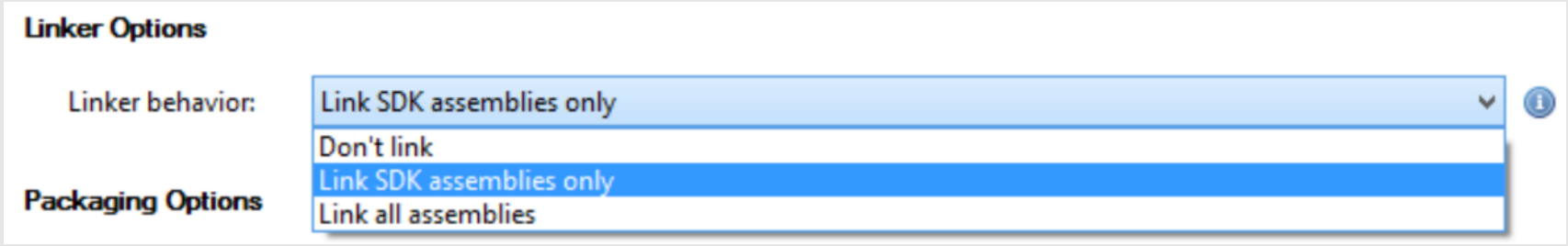
Размер пакетов приложений

- Базовый

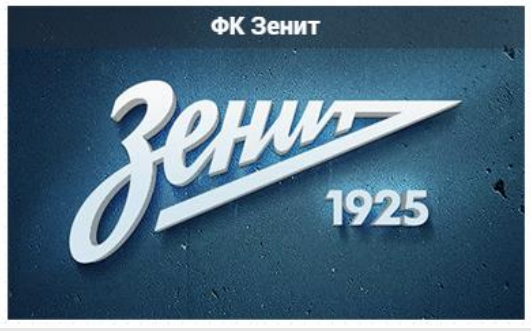


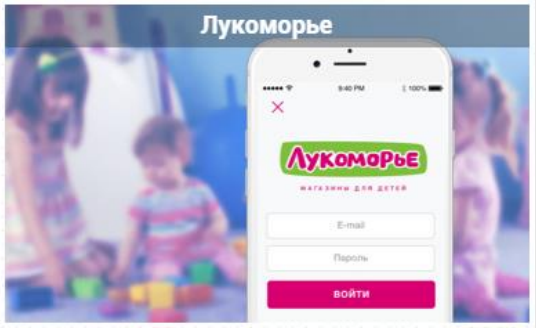
- Оптимизированный с помощью базового Linking

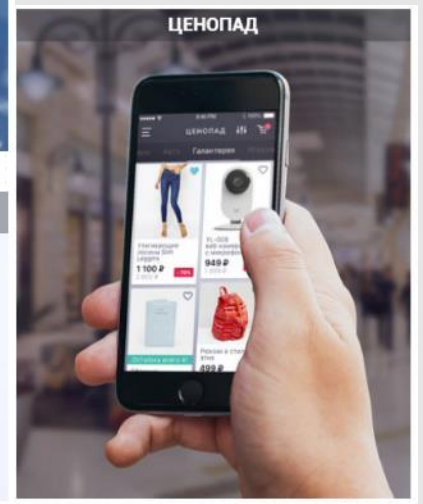


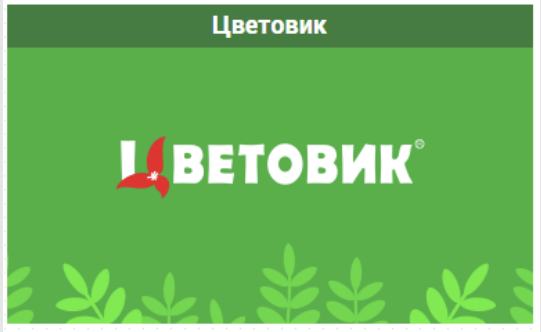


Примеры в РФ Xamarin Classic/Native









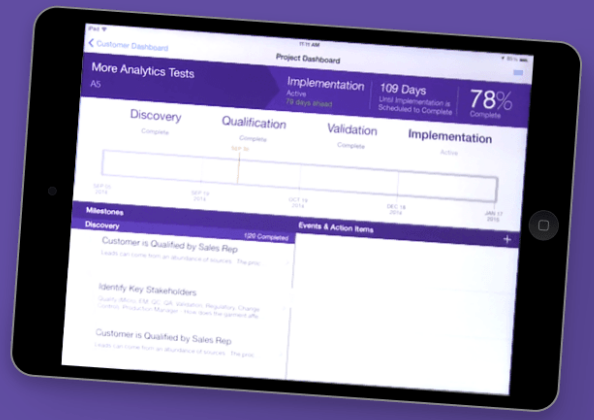
Глобальные примеры Xamarin

Kimberly-Clark

Mobilizing the selling process with Xamarin drives millions in extra revenue for Kimberly-Clark.

Kimberly-Clark's Global Scientific Division uses the Apex iPad app to streamline the selling process for clean room environments. The app, built by Xamarin Premier consulting partner BlueTube, is drastically reducing the sales cycle after their first attempt with an HTML5-based app wasn't adopted by sales representatives.

- Reused the majority of their existing C# code and existing web services
- App integrates with Salesforce and Sitecore
- Kimberly-Clark has seen a significant increase in revenue



NATIONAL INSTRUMENTS

National Instruments uses LabVIEW to turn tablets into powerful engineering tools.

LabVIEW is the industry standard in design software for engineers and scientists creating and deploying measurement and control systems. The app helps engineers remotely control and monitor running LabVIEW applications. Users can create dashboards to display the values of network-published shared variables and deployed LabVIEW Web services on indicators.

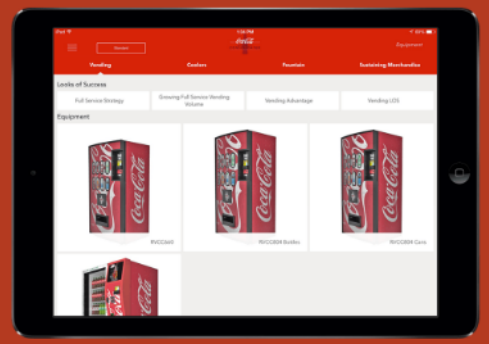
- The company has been creating, deploying, and testing the Internet of Things for decades
- Mobilizing machine monitoring means less downtime as failures are predicted and fixed faster
- Xamarin turned their teams into mobile developers in just weeks

Coca-Cola Bottling Co. Consolidated

Coca-Cola Bottling Co. Consolidated drives sales with dynamic sales proposals.

Coca-Cola Bottling Co. Consolidated is the largest independent Coca-Cola bottling distributor in the US, with over $1.5 billion in annual revenue. The field sales teams use iPads equipped with the Marketplace Xamarin app to help them sell more Coke products and create awareness around various programs.

- Streamlines DevOps across distributed teams with Visual Studio, Xamarin, Azure, and Visual Studio Team Services
- Allows productivity from remote locations or limited connectivity customer sites with Azure sync
- Leveraged in-house .NET skills to ship apps in four months

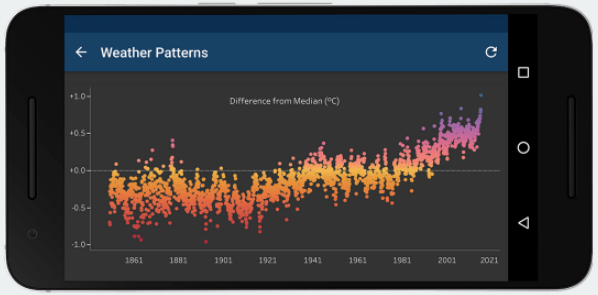


tableau

Tableau brings data to life with beautiful apps.

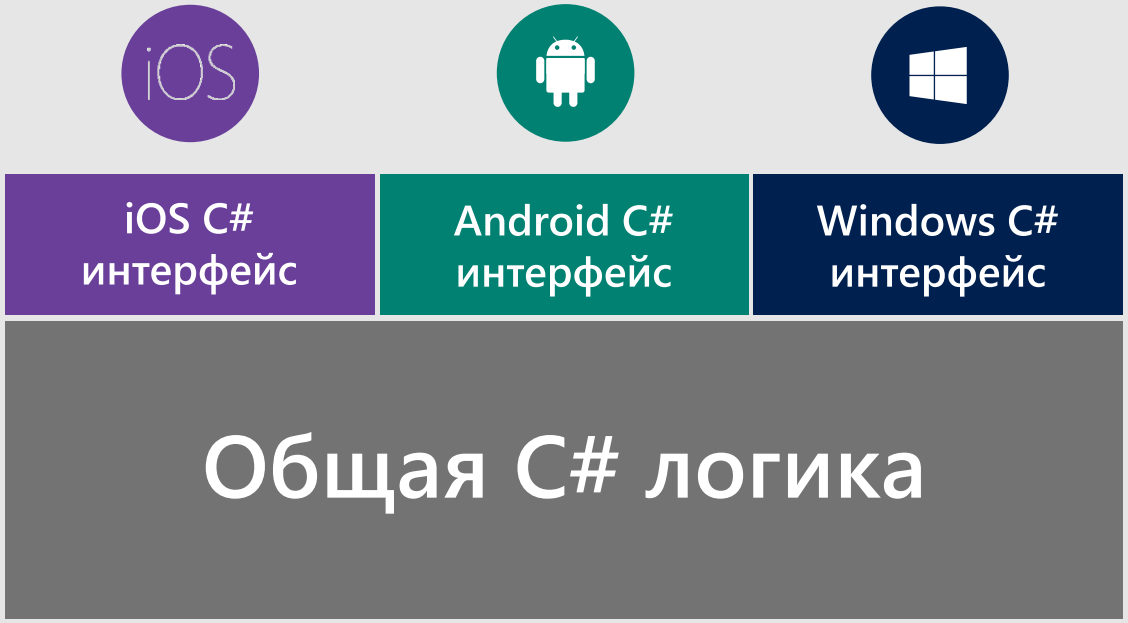
Tableau is revolutionizing visual analytics, helping its customers see and understand their data. On-the-go users need immediate access to data from airports, restaurants, or customer sites to make informed decisions. Tableau recently rewrote its legacy Tableau Mobile app with Xamarin, enabling its development team to deliver high fidelity, high quality, and delightful apps that reach more global users and allow customers to maximize their Tableau investments.

- Migrated existing Android and iOS platform-specific apps to Xamarin, resulting in a higher quality app with near-zero crash rate
- Secure and frictionless connection with enterprise SSO
- Fast and fluid user experience makes data the star
- Customers go from questions to answers in just a few taps
- Automatic sync displays beautiful dashboard snapshots while offline

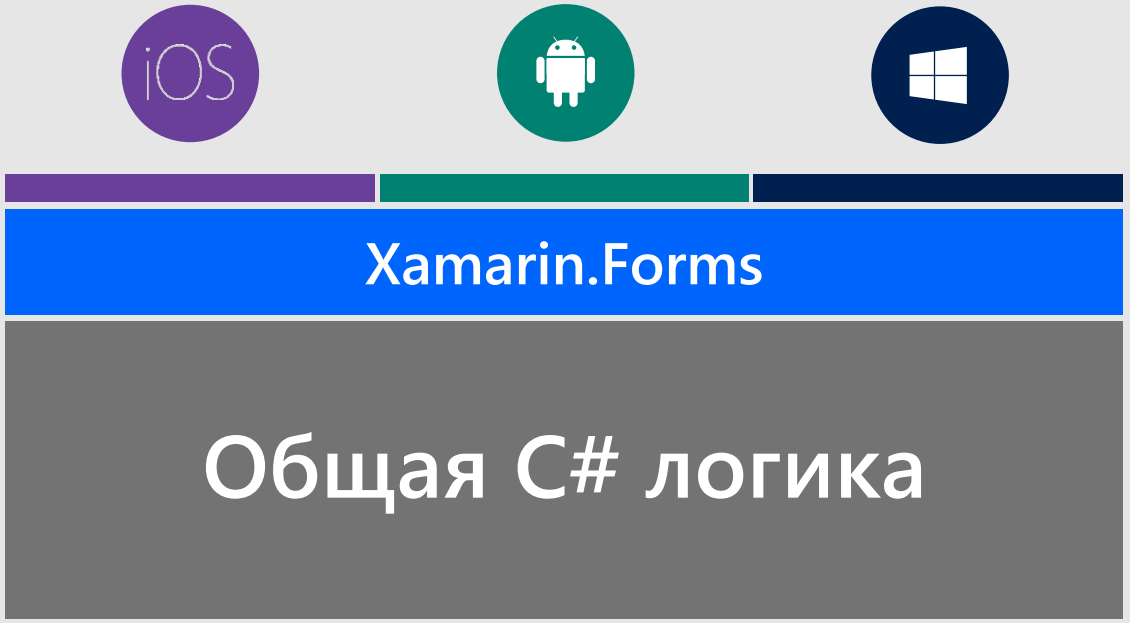


https://www.xamarin.com/customers

Xamarin Forms – еще больше общего кода

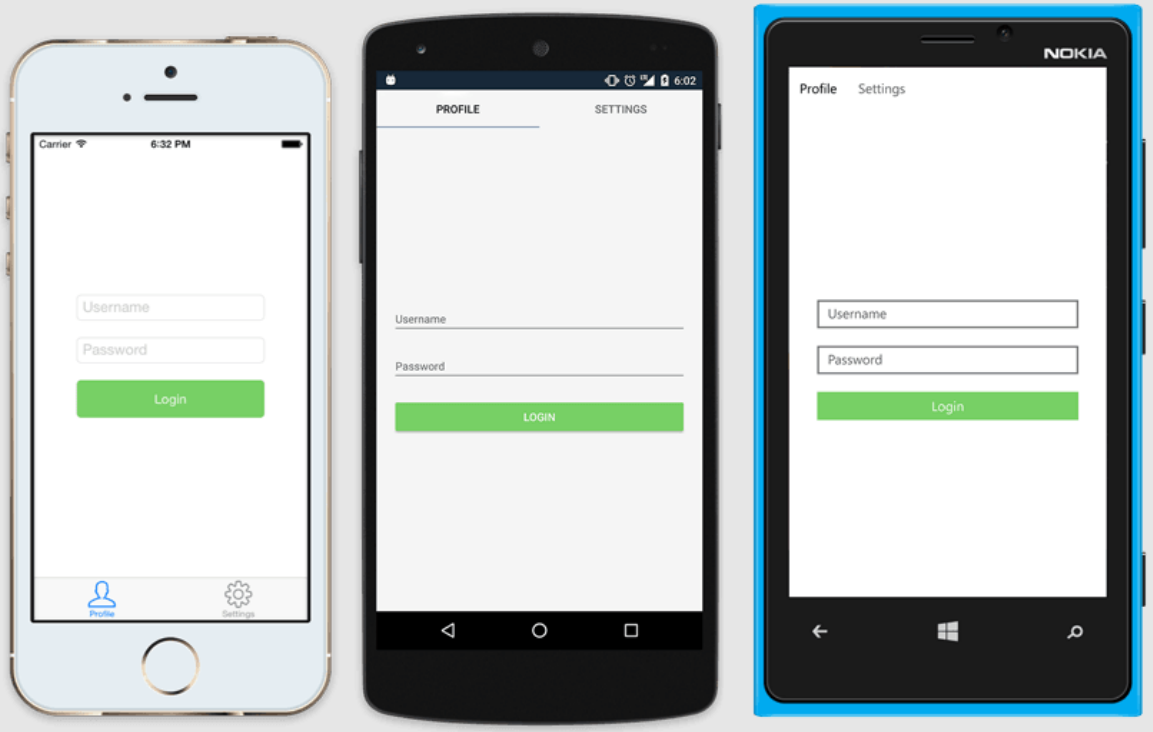


Xamarin Classic/Native



С Xamarin.Forms:
все по прежнему нативное,
еще больше общего кода

Нативный интерфейс из общего кода




```
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            xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
            x:Class="MyApp.MainPage">
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<ContentPage Title="Profile" Icon="Profile.png">
   <StackLayout Spacing="20" Padding="20"
                VerticalOptions="Center">
      <Entry Placeholder="Username"
             Text="{Binding Username}"/>
      <Entry Placeholder="Password"
             Text="{Binding Password}"
             IsPassword="true"/>
      <Button Text="Login" TextColor="White"
              BackgroundColor="#77D065"
              Command="{Binding LoginCommand}"/>
   </StackLayout>
</ContentPage>
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   <!-- Settings -->
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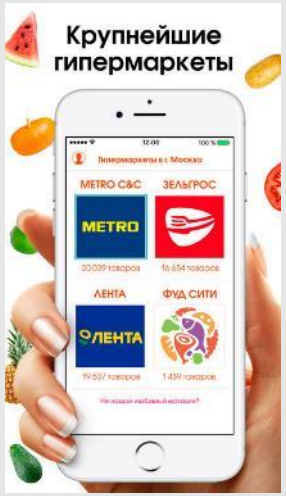
Примеры приложений Xamarin Forms



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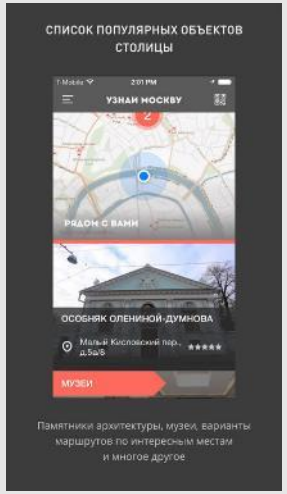
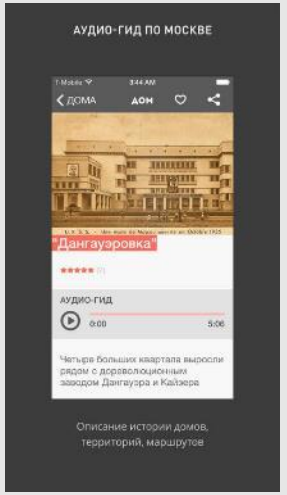
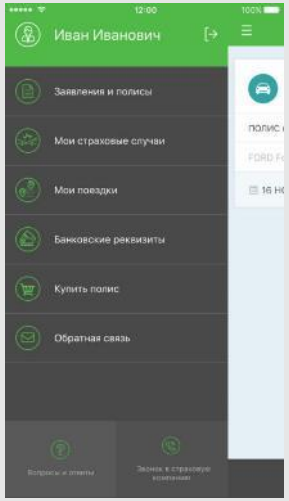
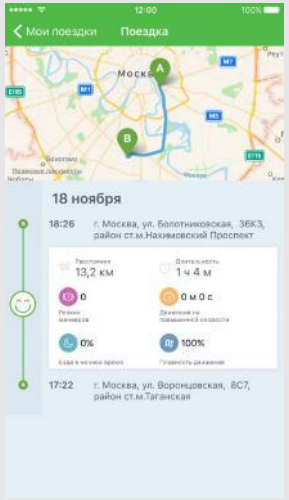




Узнай Москву

От Правительство Москвы

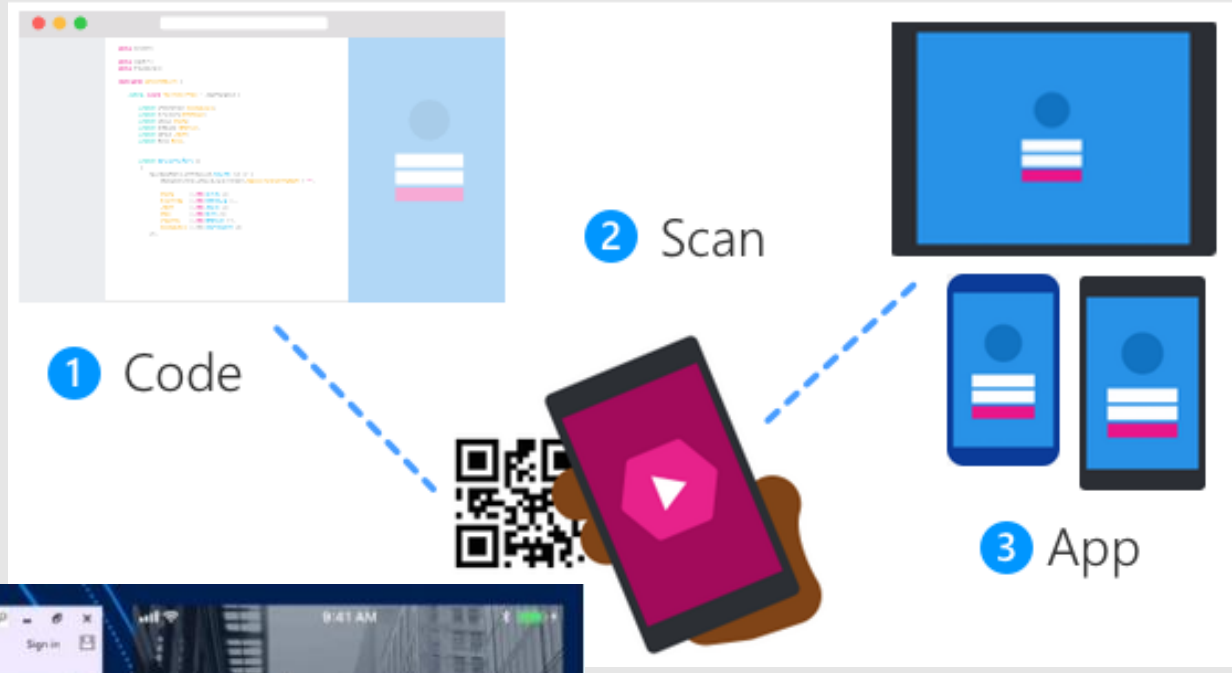


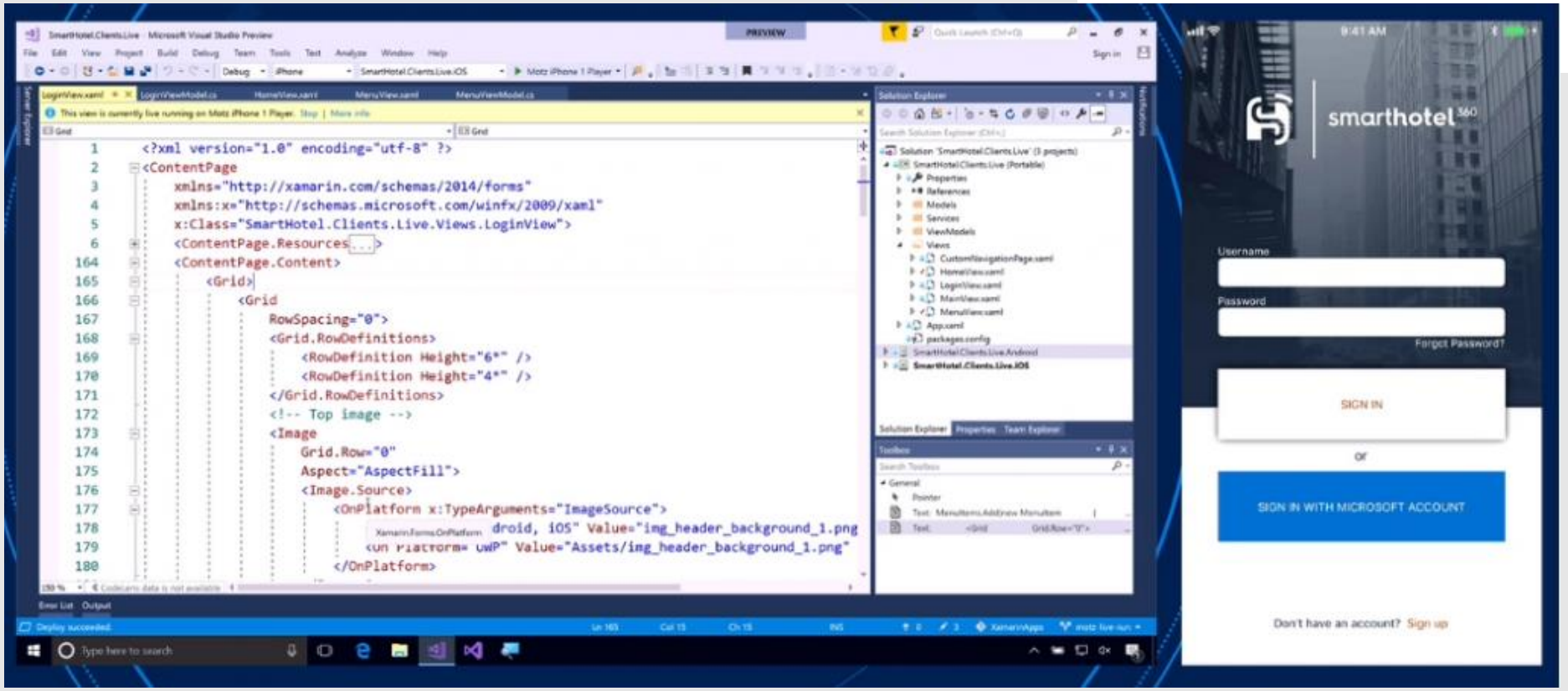


ИНТАЧ Страхование

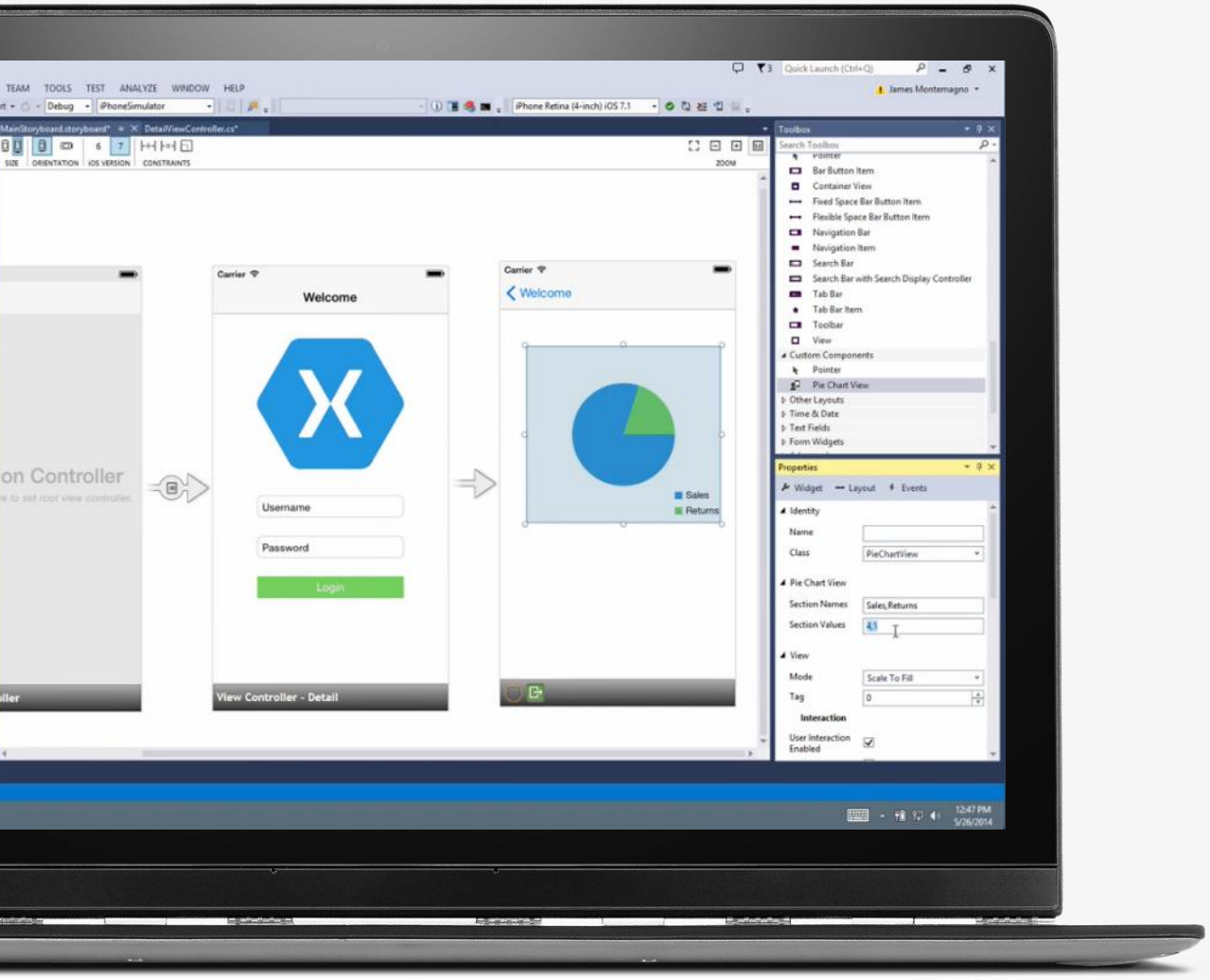
Xamarin Live Player

Разработка приложения «вживую»

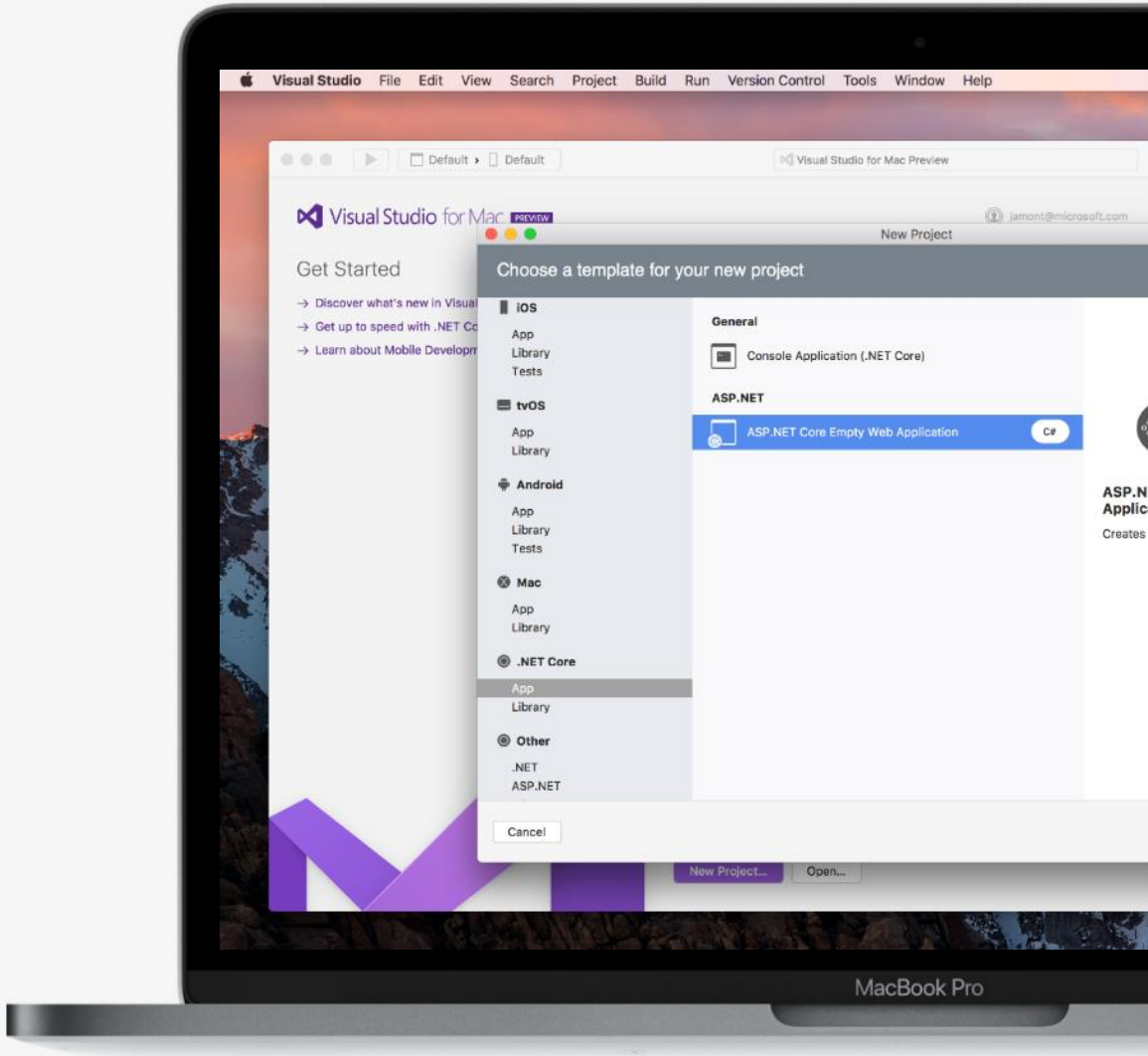




Visual Studio



Visual Studio for Mac



Microsoft

Что интересного есть у Microsoft для мобильной разработки в 2018 году

Ромуальд Здебский
Microsoft
rzdebski@microsoft.com

Appendix

AppCenter Pricing

Build	Test	Distribute	Analytics	Crash Reporting	Push Notifications
					
Build Objective-C, Swift, Java, Xamarin, and React Native in the cloud	Automate UI tests on thousands of real devices	Send your apps to your beta testers and app stores instantly	Gain insights into your audience and app useage	Monitor your app health with real-time crash reports	Engage your users by sending targeted messages
240 build minutes per month. Up to 30-min per build	Free 30-day trial.	Unlimited distributions. Unlimited users.	All features included.	All features included.	Up to 5 audience segments.

Run unlimited, faster builds

Ship your app faster with multiple builds running in parallel.

Each paid build comes with unlimited build time, ensuring all builds run and complete.

+$40/month
per build concurrency

Test your app in the cloud

Run UI tests on thousands of real devices and hundreds of configurations.

Each device concurrency comes with 30 device hours per month, with an upgrade option for unlimited hours.

+$99/month
per test device concurrency

Target additional audience segments

Engage your audience with targeted messaging at the right time.

Pay per number of monthly active devices for targeting more than 5 audience segments.

+$10/month
per 100k active devices

>90%

Fortune 500 компаний используют Microsoft Cloud

The trusted cloud

More certifications than any other cloud provider

Industry leader for customer advocacy and privacy protection

Unique data residency guarantees