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# Research Faculty Summit 2012

ADVANCING THE STATE OF THE ART



# End-User Programming for Mobile Devices



# agenda

## introduction

Nikolai Tillmann, Microsoft Research

## An Experiment in Developing Small Mobile Phone Applications Comparing On-Phone to Off-Phone Development

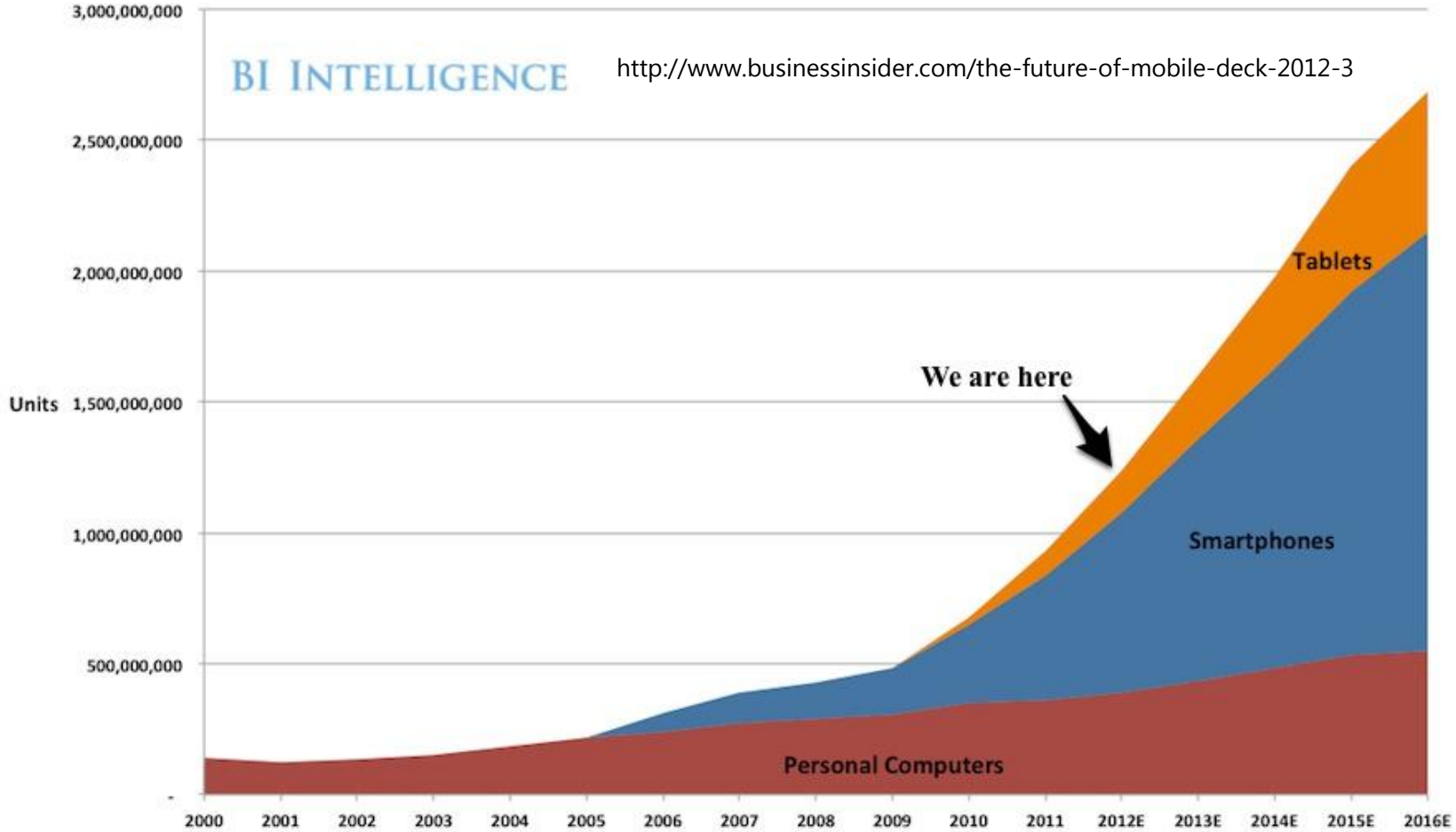
Tuan A. Nguyen, Sarker T.A. Rumeen, Christoph Csallner, University of Texas at Arlington

## Teaching introduction to computer science on mobile devices

Suresh Lodha, University of California, Santa Cruz

# technology shift

## Global Internet Device Sales



BI INTELLIGENCE

<http://www.businessinsider.com/the-future-of-mobile-deck-2012-3>

We are here

Source: Gartner, IDC, Strategy Analytics, company filings, BI Intelligence estimates

# pervasive, sensors

mobile devices have more to offer than your last PC:

users carry phone at all times

sensors: touchscreen,

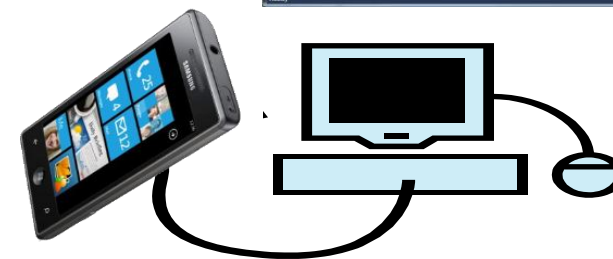
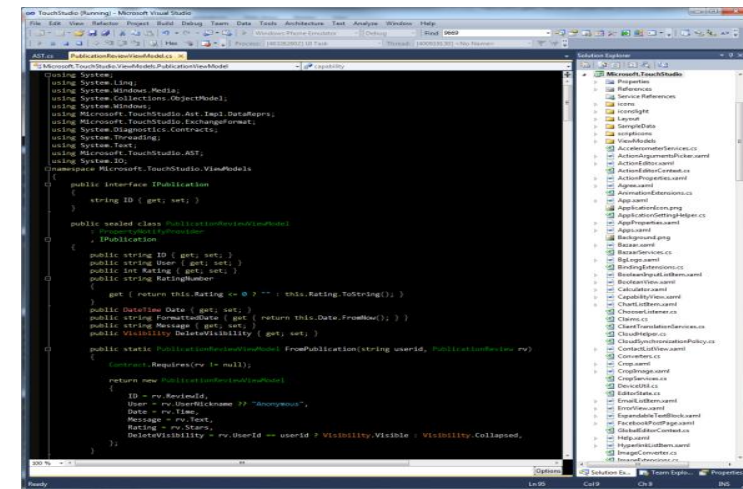
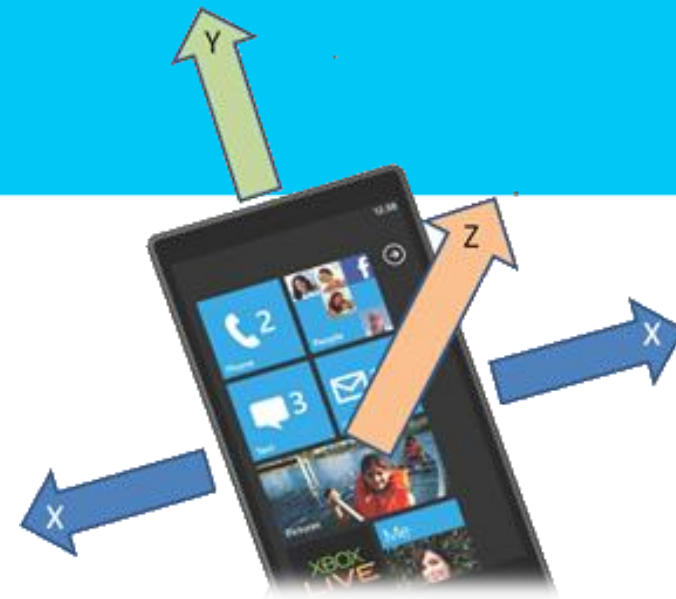
high-resolution camera(s),

WiFi, cellular, bluetooth,

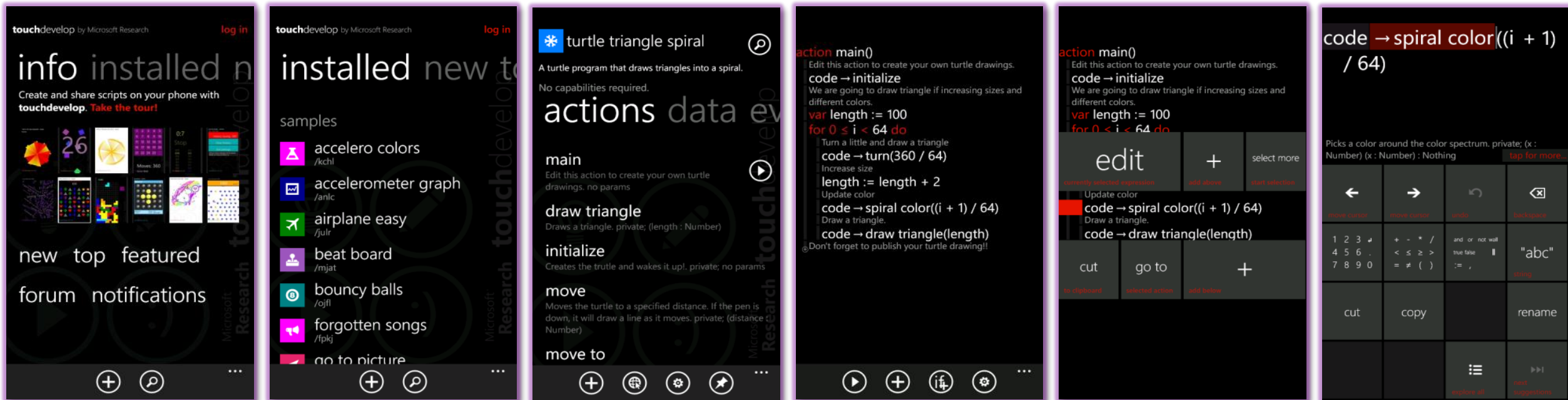
GPS, accelerometer, gyroscope,

compass, ambient light sensor,

proximity sensor, FM tuner, NFC, ..



# a touch-based IDE in your pocket



**touchdevelop** is an app to create, share, run scripts everything happens on your phone – no PC required!

# touchdevelop

# demo

introduction to Windows Phone  
introduction to **touch**develop app  
basic program editing  
song shaker



# what do our users do?

Balaji Athreya, Faezeh Bahmani, Alex Diede, Chris Scaffidi – Oregon State University

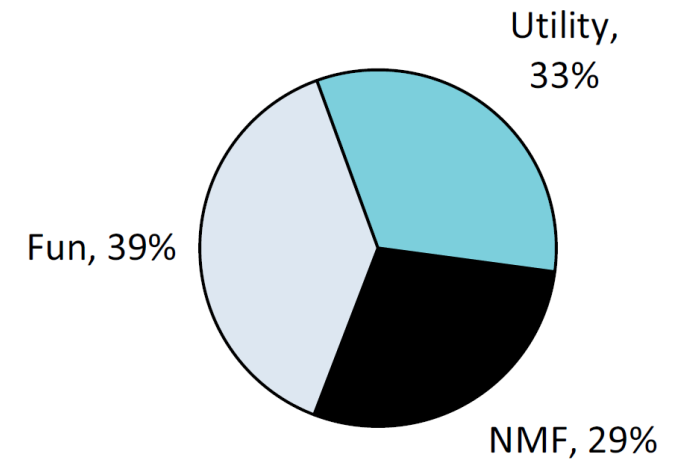
## students conducted qualitative analysis of scripts

many scripts resemble regular apps

1/3 of scripts serve no apparent functional purpose (NMF)

other scripts tend to implement unique functionality

low rate of code reuse (5%)





> 6000  
scripts





# a new programming experience

reaching more people

programming on the go

modern language

specialized for mobile devices

social experience

book + slides



available free online

[touchdevelop.com/book](http://touchdevelop.com/book)

[touchdevelop.com/slides](http://touchdevelop.com/slides)

introduction to programming on a phone

how to use app + editor + language

for teachers + students



# need phones?

## University Phone Loan Program for **touch**develop

are you interested in using **touch**develop for teaching...

basic programming concepts?

mobile computing classes?

compiler and languages classes?

investigating the **touch**develop language?

loan program: get Windows Phones for a semester.

how to apply: [touchdevelop.com/teach](http://touchdevelop.com/teach)

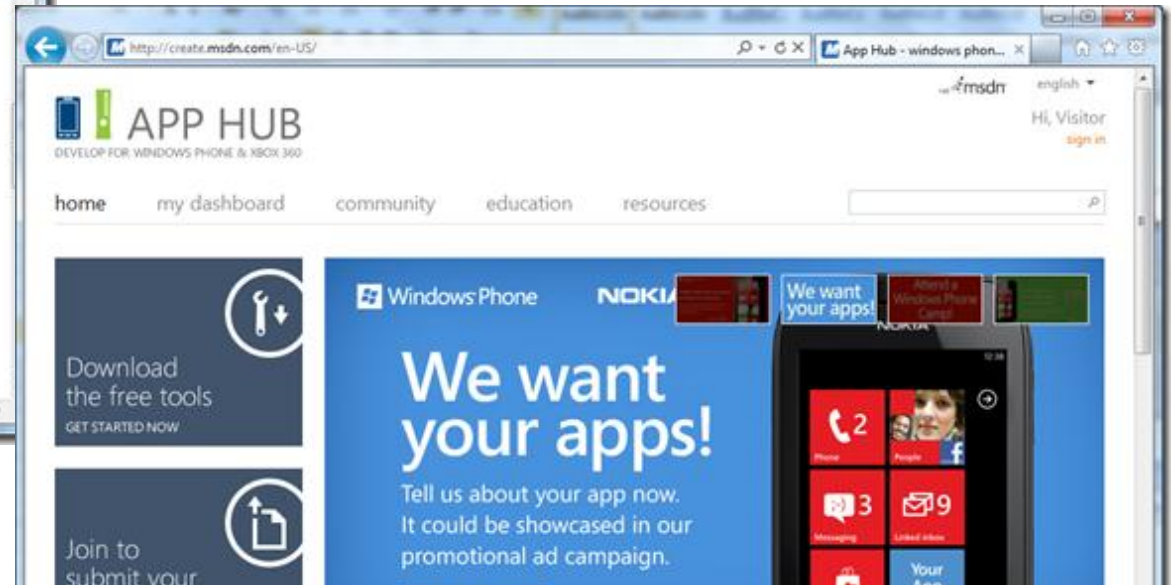
sell apps



submit your scripts as real apps  
to Windows Phone Marketplace!

requires App Hub developer account (free for students via [Dreamspark](#))  
app needs to pass regular certification process on App Hub

[Learn more...](#)





# opportunities...

## teaching

introductory courses, advanced courses

## research

user interfaces, clone analysis, privacy concerns, plug-ins, distributed state, distributed execution



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