Student
International
Business Council

Fall 2018 Microsoft Project

Microsoft

Agenda

- Introduction
- Microsoft Analysis
- Frontline Worker Industry Analysis
- Recommendation
  - Manufacturing Strategy – Augmented Reality
  - Healthcare Strategy – IoT Integration
- Impact
- Risks
- Implementation Timeline
- Q&A

SIBC

- Student International Business Council
- Largest student-run organization on campus
- Amidst 27th academic year

"Peace Through Commerce"

Microsoft SIBC Analysts

Dominic Bozzo
Pittsburgh, PA
Class of 2020
Computer Science &
Corporate Practice

Eddie Yuan
Omaha, NE
Class of 2020
Computer Science &
Economics

Runzhi Tom Song
Beijing, China
Business Analytics &
Economics (‘21)

Marina Maldonado
Weston, FL
Computer Science
(‘21)

Brock Gorman
Dayton, OH
Science Pre-
Professional (‘21)

Jack Olmanson
Minneapolis, MN
Computer Science
(‘21)

Sarah Hwang
Monument, CO
Computer
Engineering (‘21)

Marcos Salamanca
San Antonio, TX
Computer Science
(‘20)

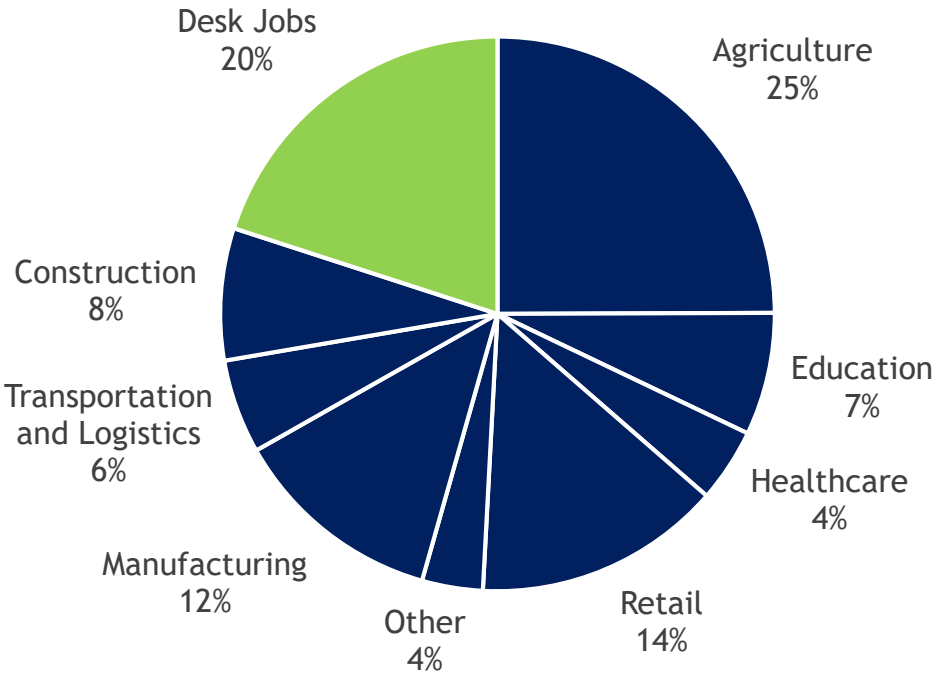
Noah Viner
Shelburne, VT
Computer Science
(‘21)

Liam McPhillips
Scarsdale, NY
Finance & Biology
(‘21)

Given the current competitive landscape and Microsoft's unique strengths in the B2B space,
how can the company best capture the frontline (deskless) worker market?

Technology has yet to be integrated into the lives of workers outside of traditional corporate settings

Global Workforce Distribution



Frontline Jobs: 2.7 billion

Desk Jobs: 675 million

Challenges Faced within Frontline Industry

1. Limited or no access to a workstation
2. Don't have a company email address
3. Reliance on managers
4. Always mobile
5. A younger workforce with new needs
6. Scheduling
7. Pertinent training

Sources: Training Industry, Hootboard

Microsoft should implement strategies to relieve workforce pain points and continue revenue growth

Manufacturing AR

Healthcare IoT

Key Objectives

Awareness & Communication

To mitigate frontline issues, technology will need to address training and communication

Eliminate Redundant Tasks

Integrating solutions that improve efficiency will incentivize participation and attract corporations

Integrate Quickly

Leveraging B2B relations and strong Office & Cloud capabilities establishes a competitive advantage

Impact

Increase Reach and Dedicated Customer Base

Improving frontline worker presence loyalty will directly impact sales volume and utilization of key resources

Invest in R&D for Long Term Payout

Strategic allocation of R&D dollars will allow Microsoft to establish itself as a frontline industry leader in tech

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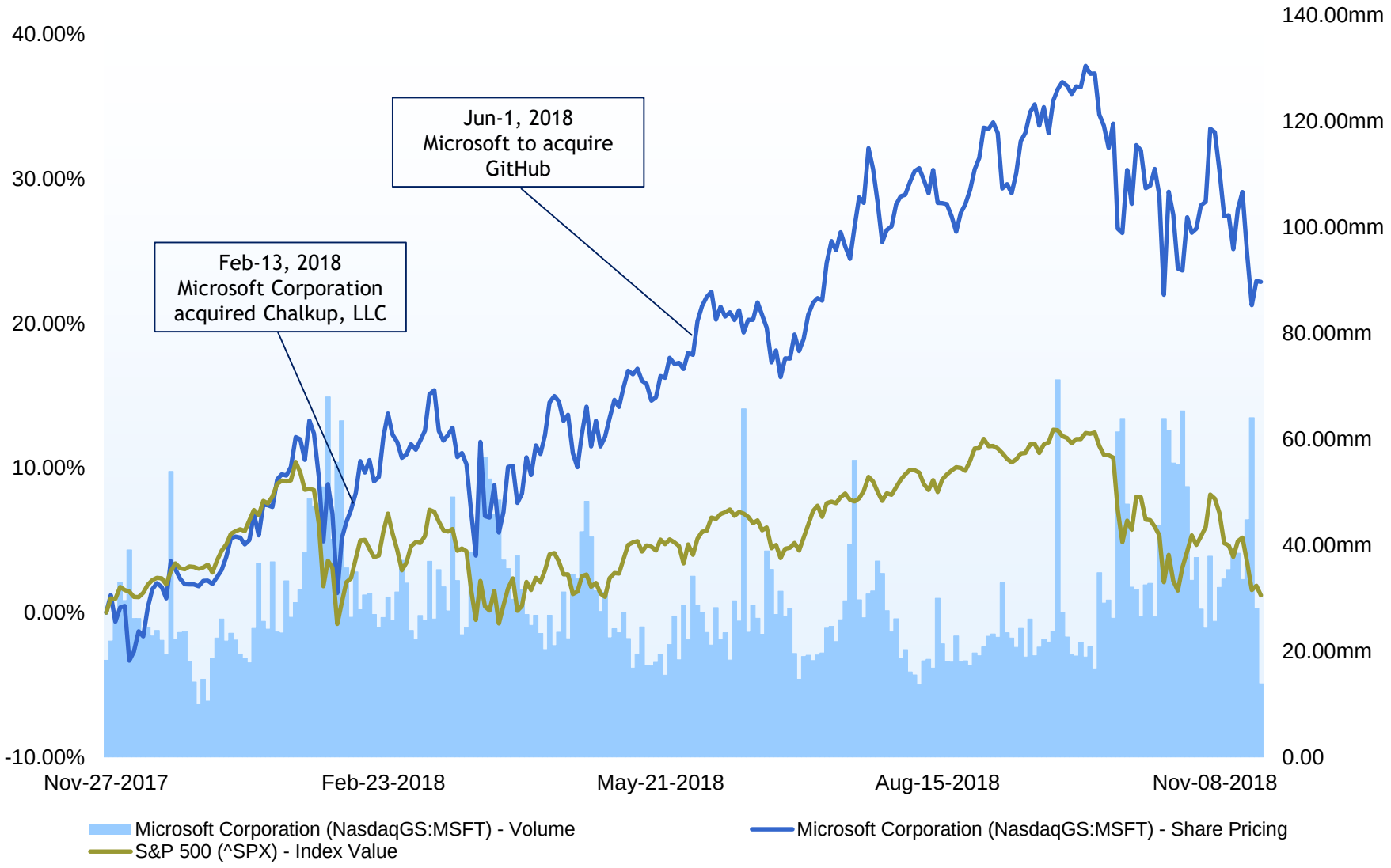
Microsoft's strong performance as an industry leader allows for continuous investment in research and development



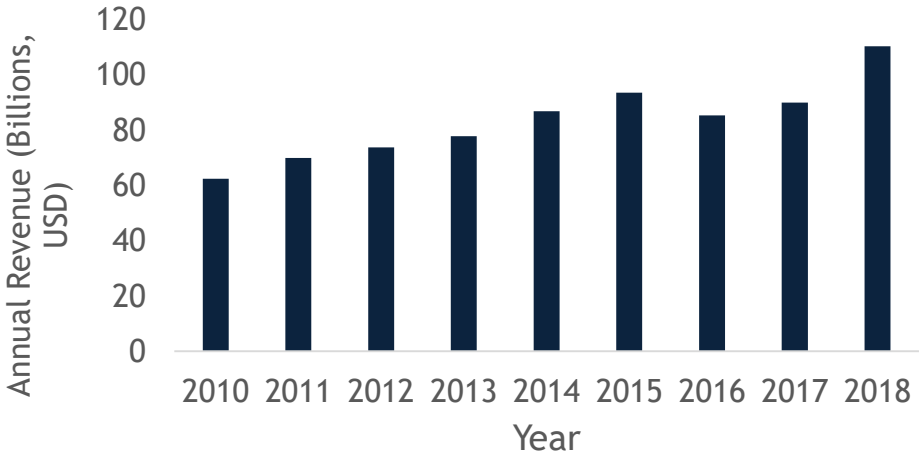
Source: CapIQ

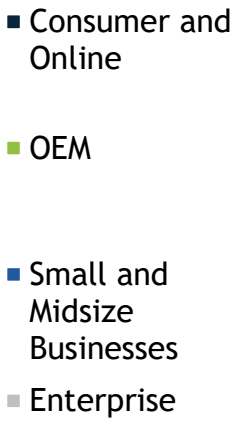
Microsoft's B2B-driven revenue has climbed as it continues to develop and acquire enterprise products

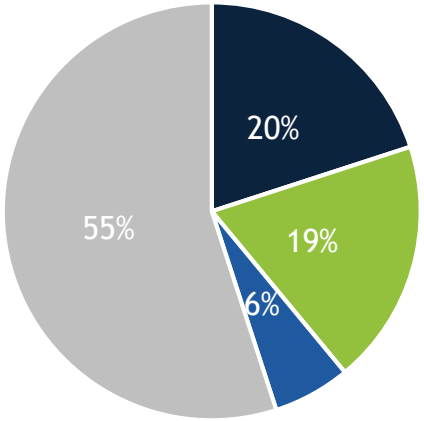
Major Enterprise Benchmarks, Last Ten Years

- **June 2011** • Launched Office 365
- **October 2011** • Acquisition of Skype
- **October 2012** • Launched Windows 8
- **February 2013** • Launched Outlook.com
- **September 2016** • Announced new AI Research Group
- **October 2016** • Human parity in speech recognition
- **December 2016** • Acquisition of LinkedIn
- **June 2018** • Announced acquisition of GitHub

Revenue Analysis







Sources: Microsoft, Investopedia

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Companies are generally increasing expenditures on frontline workers, with some industries more eager than others

Projected Adoptions of Technologies Across All Industries

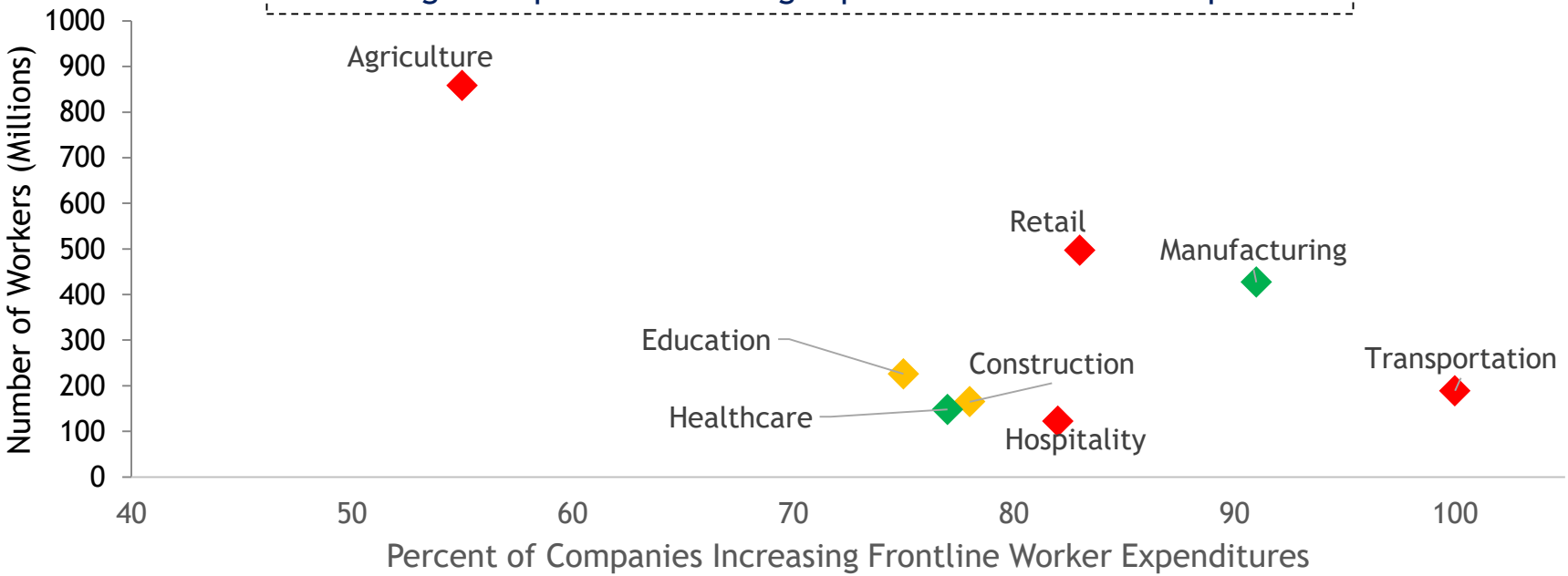
Adoption of Mobile Technology: 94%

Adoption of Wearables: 70%

Industry Respondents That Plan to Increase Tech Spending: 82%

Promised Average Spending Increase: 31%

Percentage Companies Increasing Expenditures vs Worker Population



Source: Deskless Workforce 2018

Frontline workers in Manufacturing and Healthcare present the largest opportunities for investment

Legend	
	excellent
	moderate
	lacking

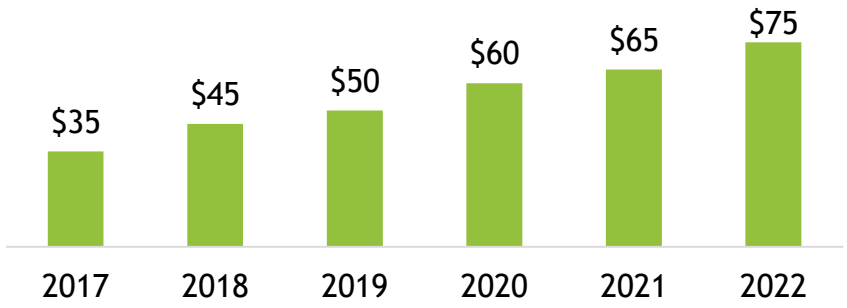
	Manufacturing	Healthcare	Education	Construction
Worker Population	427 Million	148 Million	226 Million	265 Million
Percentage Interest	91	77	75	78
Feasibility of Integration	Moderate	High	High	Low
Tech Development	In Development	Present	In Development	Beginning Development
Competition	Moderate	Moderate	High	Low
Relevant Microsoft Technology	HoloLens	IoT/Office Platform	Azure, Office	N/A
Room for Improvement	Large	Large	Small	Large

Sources: Microsoft, Deskless Workforce 2018

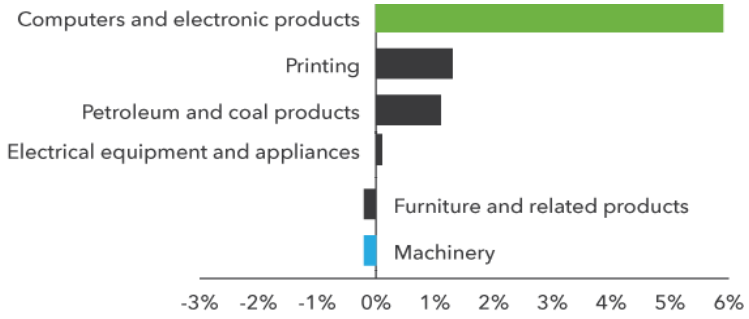
Microsoft should pursue the manufacturing frontline worker in preparation of sharp increases in technology spending

Building Blocks of Industry 4.0

Size of IoT Market in Manufacturing (Billions)



Average Annual Manufacturing Productivity Growth



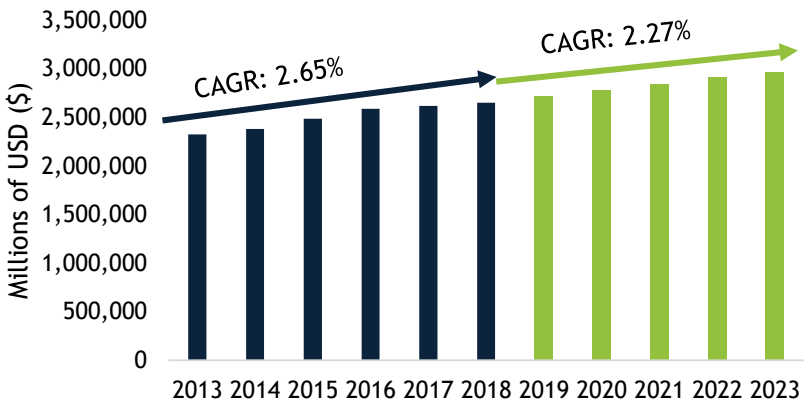
Sources: BCG

Innovative healthcare technology improves the worker experience and drives more accurate patient outcomes

Driving Factors of Healthcare Technology

- 80% of physicians use medical apps to aid patients
- Mobility
- 100,000 apps already allowing for remote work
- Improved access from the cloud
- Big Data & Cloud
- Better and safer data storage
- Telemedicine opportunities and remote communication
- Info and Com.
- Shorter wait times
- Reduces healthcare costs by about 5%
- Digital Records
- Eases workflow, saves time, and prevents mistakes

Healthcare Industry Outlook



Sources: AIMS Education, Statista

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Companies express interest in enhancing the manufacturing worker experience, but don't yet have the tools to do so

91% investing in digital factories, but only 6% consider their factory to be fully digitized

Industrial IoT has expected CAGR of 7.3% through 2020

66% of manufacturing enterprises reported using cloud implementation

Global spending of $4.2B on cloud in 2018 (23% growth)

Problems Facing the Frontline Worker		Innovations/Solutions
	**Efficiency** Workers can only be as productive as their technology	Internet of Things • New technology allows floor employees to focus on higher level tasks
	**Improper Training** Studies shown only 10% of training is effective	Augmented Reality • Give employees live instructions on how to perform tasks
	**Communication** 82% of CEOs and managers say speaking to employees is difficult	Integrate App • Managers can better oversee production using key insights from frontline workers

Sources: Gallup, Diversity Journal, PwC

Production workers face additional challenges such as strict regulations and a skill shortage

Frontline Worker Focus

Production Workers

- Blue-collar workers who work on the production floor
- Make up the manufacturing frontline worker population

Regulations and Traceability

- Manufacturing sector facing increasing regulation and compliance measures
- Regulations often require the ability to track items and materials used during the manufacturing process

Labor Issues

Automation Threatens Labor

- Automation can kill 73 million US jobs by 2030
- "Lights-out" manufacturing

Decrease in Qualified Labor

- 22% of skilled manufacturers are retiring over the next decade
- Industry is projected to fall 2 million workers short of its needs

Sources: Deloitte, GlobalManufacturing, McKinsey, CBInsights

Augmented reality equipment like HoloLens will increase efficiency and skill among production workers, remediating some of the worker shortage

Augmented Reality Benefits

Skills	AR can act like a real-time visual manual	Makes skilled labor like a "downloadable" skill	Empowers workers regardless of skill level
Data	AR devices have the capabilities to record data	Can keep records that help comply with regulations	Help figure out ways to optimize production

Proposed HoloLens Solution

Holograms

- Holograms enable visualization and working with digital content as part of the real world

Interaction

- Users can interact with training content and supervisors in the most natural way possible

Recordings

- Mixed reality capture allows users to capture experiences as a photograph or video

Source: Microsoft, CBInsights

The manufacturing worker can interact with holograms while speaking with a supervisor and monitoring other tasks

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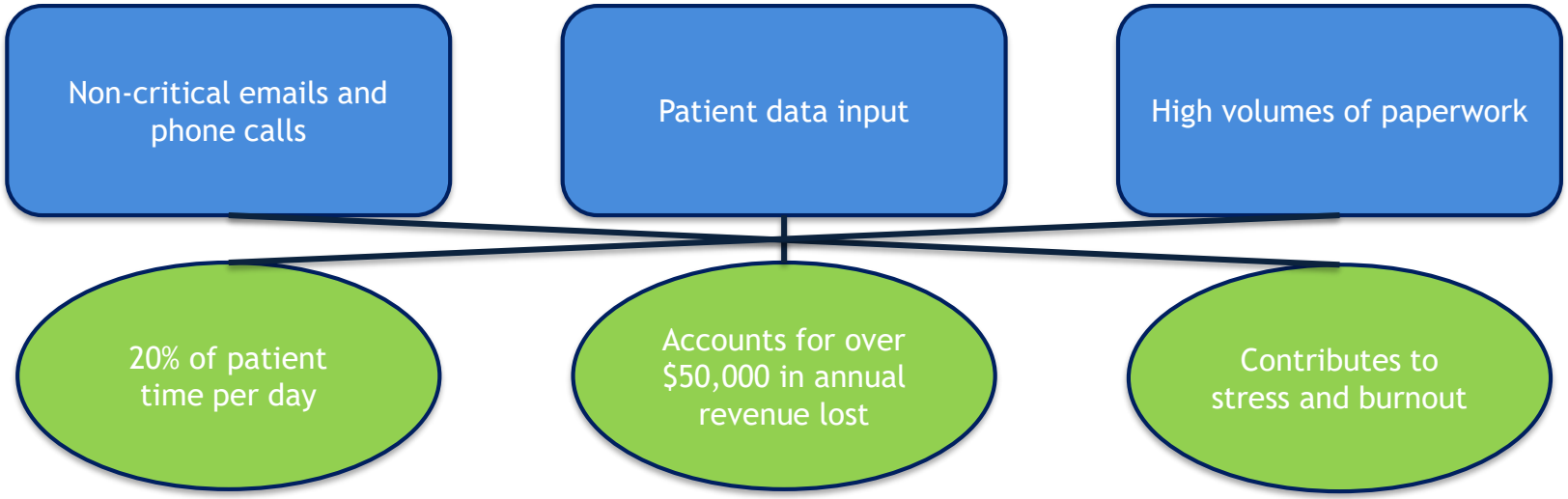
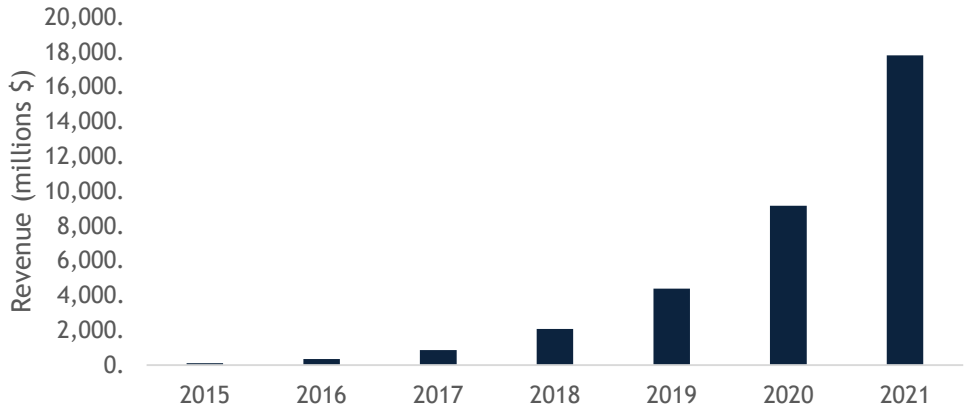
Healthcare workers spend too much time on non-critical tasks, which can be remediated by an IoT system in the office



Projected Size of Global Market for Wearable Devices in the Healthcare Sector



Sources: Reuters, Medical Economics

An integrated IoT system can assist workers by eliminating paperwork and providing doctors with needed information quickly

IoT System Overview

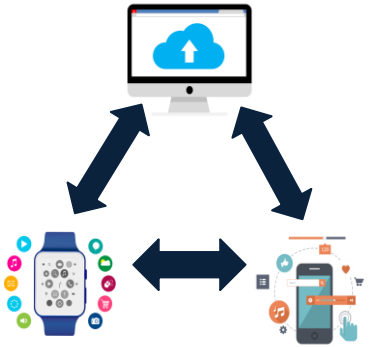
Cloud

Features:
- Storing and protecting data and personal information
- Sharing news, messages, information, and data

Cost:
- R&D costs: use existing cloud system
- Maintenance costs: maintain and repair the system
- Update costs: enhance to meet professional needs

Wearable Device

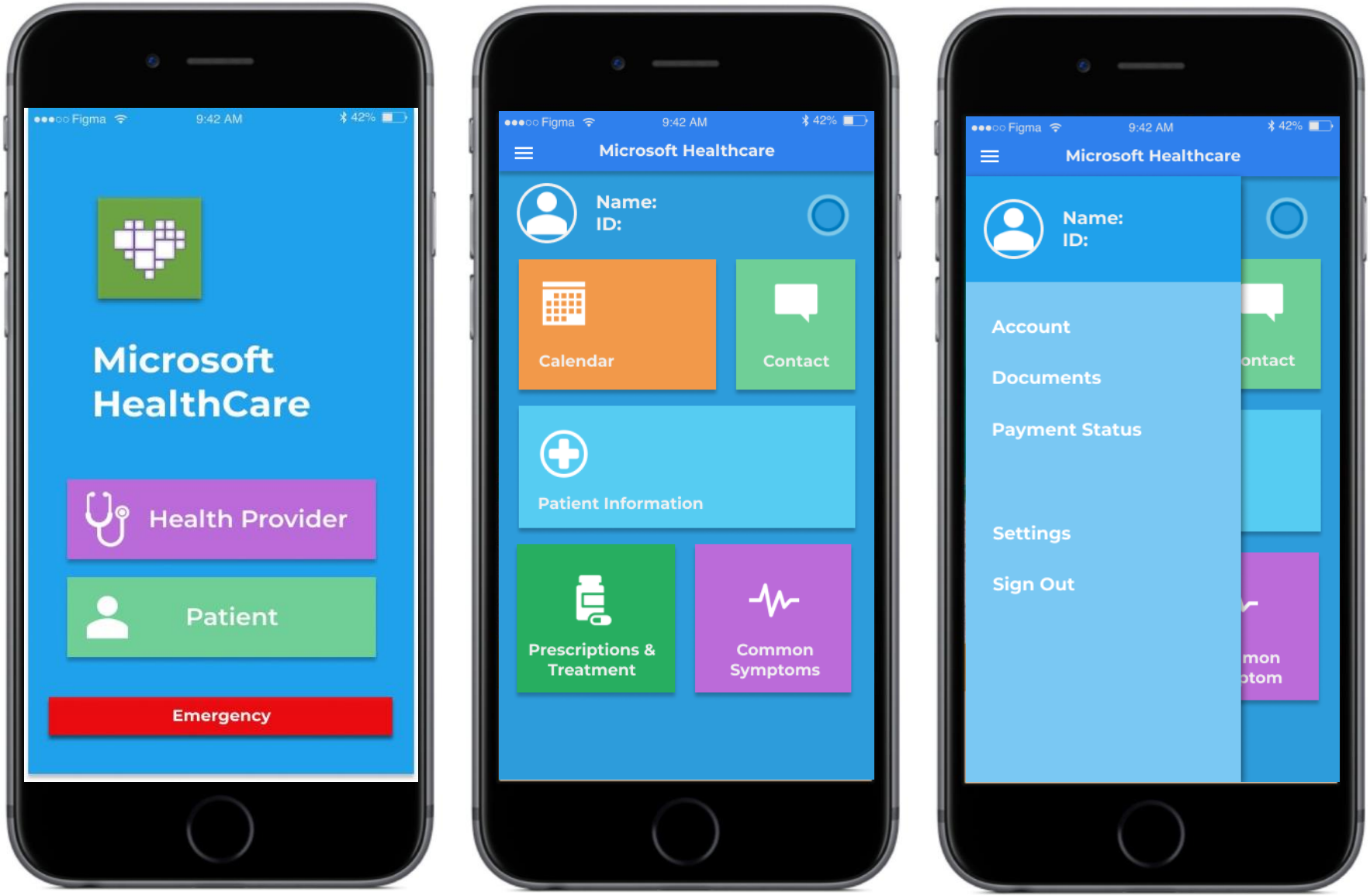
Features:
- Show to-do list and the day's agenda
- Brief the doctor on each patient
- Search for basic information and data quickly
- Doctor can sign off on prescriptions from wearable



Mobile App

Features:
- Use Cortana to fill out paperwork with voice recognition
- Use AI tools to suggest proper diagnoses and prescriptions
- Connect with both the cloud and the wearable device
- Able to save and extract data and info from the cloud
- Video communication between patients and workers creates telehealth opportunities

Healthcare providers can manage their patient records and schedules at the tip of their fingers



With this system, healthcare workers can be briefed on patients with ease and input data for paperwork using Cortana

Healthcare frontline workers will see vast improvement in their schedules through IoT

Old Schedule

Review schedule and patients for the day

Prep for patient

Review forms patient filled out while waiting for appointment

Examine patient and diagnose

Write down diagnoses and fill out post-appointment form

Verify necessary prescriptions at drugs stores as needed

Begin preparation for next patient

All of this is done while dealing with many calls and daily emails about patient situations

New Schedule

Schedule is read to doctor by AI assistant as they get dressed

Info for their first patient is automatically displayed on wearable or tablet

Doctor examines patient

Doctor speaks diagnoses to Cortana which records and summarizes in post-appointment form

Possible prescriptions needed are recognized by AI and doctor can sign off on wearable

Wearable or tablet prompts doctor of next patient and all necessary forms/info

1. Elimination of time consuming tasks
2. Ease of communication
3. Improvement in info accuracy

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Microsoft should sell HoloLens devices in bulk and software as a subscription service to manufacturing companies

HoloLens Device

Singular
- $5,000 each
- Current accepted price for commercial use

In Bulk
- $4,800 each
- If over 20 devices ordered ($4,000 in savings)

HoloLens Software

First Month Free

1-year plan
$6,000

3-year plan
$15,000

Prices based off of monthly Microsoft Azure pricing:
- Storage + App services: about $200 a month (depending on size)
- Price up-scaled to $500/month due to Microsoft's theoretical development of HoloLens interactive software

Sources: Microsoft, Azure Pricing

Since HoloLens has many existing features assisting frontline workers, Microsoft can expect to spend only $50,000 – $200,000 in extra R+D

Pre-Existing Features

Skype Feature
- HoloLens already possesses Skype capabilities

Windows OS
- HoloLens operates on the Windows Mixed Reality platform (under Windows 10)

Research & Development
- Minimal R&D should be required for these features

Manufacturing Application Costs

AR App

Baseline medium-sized AR application cost:

$100,000 - $200,000

R+D required on Simultaneous Localization and Mapping:

$8,750 - $17,500

Total cost for building AR app:

Average: $163,125

Range: $108,000 - $217,500

Source: Think Mobiles, Finances Online, Customer Think, onMSFT, Server Mania, Agilie

The healthcare pricing strategy is largely subscription-based, with the exception of purchasing wearable devices

Mobile App	- Free download and account creation - iOS and Android - 6 month free trial for account creation - 2 methods of payment: - Monthly: $2.99 / month subscription - Annually: $24.99 / year subscription
Cloud System	- $1200/month for first year - $1800/month after first year - Unlimited health provider accounts included
Wearable Device	- $200 if purchased with cloud system - $300 if not purchased with system - Discounted bulk purchases - New iteration of wearable every 3-5 years
Bundle	- Cloud System + 100 wearable devices: $80,000 - Cloud System + 200 wearable devices $97,000 - Cloud System + 300 wearable devices: $112,000

Sources: Microsoft

The mobile app for the recommendation would cost approximately $300,000 and the cloud storage would cost Microsoft $27,000 per hospital over five years

Healthcare IoT Costs

Cloud Storage

- $0.09 per GB/month for data storage
- At 5 TB data (one hospital): $450 per month of storage set aside by Microsoft
- 5 year plan: $450 x 60 mo = $27,000
- Recommend passing most of these costs onto the customer

App

- Estimate for large enterprise mobile app (iOS and Android): $251,000
- Annual maintenance costs: $5,000-$10,000
- Total 5 year cost estimate: $300,000

Total Cost Estimate – 5 year plan

Cloud Storage

$27,000 per hospital x 10 hospitals = $270,000

Mobile Application

$300,000

Total

$570,000

Source: Comentum, Statista, Business of Apps, Sherweb

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While there are many benefits to such an implementation, there are also risks that Microsoft should be aware of

HoloLens

Potential Health Risks

- Eye Strain, Nausea, and Motion Sickness

Cost and Training

- Are HoloLens too expensive to be beneficial? Would training every employee be inefficient?

Workplace Isolation

- Lack of communication with other employees

VR Technology Still Developing

- With how rapidly VR is changing, the future outlook is difficult to predict

Cloud and Wearable

Data Security Risks

- Security Breach, Overwhelmed IT Staff, Regulation Compliance

Cost

- Staff Training, Top Security Features for Sensitive Information, Unexpected Costs

Voice Recognition Imperfections

- Voice recognition must be perfect, otherwise it is less effective than having a scribe

Tech Savviness of the Workers

- With the wearable, less tech-savvy doctors may struggle to adapt

Source: Business Insider, BMC Medical Information

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Identifying target companies and collecting feedback for development are key to lasting presence of manufacturing solution

Manufacturing Implementation Timeline

Step 1 Choose Company	Step 2 Provide HoloLens	Step 3 App Development	Step 4 Training
• Identify company intending to invest in frontline worker improvements • Seek opportunities for Microsoft to create relationships while making a profit	• Sell initial amount of HoloLens glasses • Set up company with subscription for app development and Microsoft services	• Help a company develop custom features from a baseline app • Option for company to develop their own app or use service platform for Azure	• Company trains workers on how to use HoloLens and the new app • Allow workers to adjust to new working environment

3-6 months → Steps 1 & 2

6-12 months → Step 3

6-18 months → Step 4

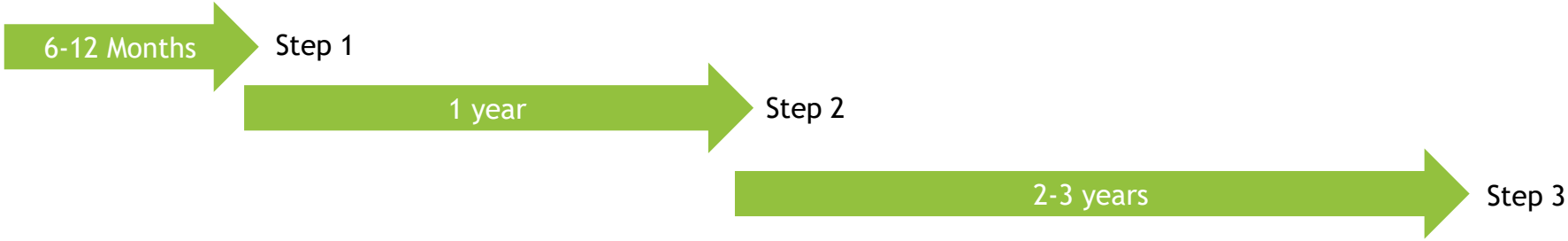
Future Development

Fix any technical issues that arise with initial implementation → Work on updates for software every ~1.5 years → Update hardware technology every ~5 years

Analyzing customer demands will prepare teams to swiftly and effectively commercialize our healthcare solution

Healthcare Implementation Timeline

Step 1 Research & Development	**Step 2** Test Marketing	**Step3** Commercialization
• Identify customer demands and product features • Design the mobile app, wearable devices, and the cloud system; connect them as a whole • Internal testing	• Introduce the products to patients in a few target hospitals for testing in the real market • Collect data and feedback • Update the system based on feedback	• Push the products into market and advertise to both patients and hospitals • Let both patients and hospitals customize their apps • Keep tracking performance of the system



Future Development

Mobile App
- Repair problems based on patients' experiences
- Add new features based on changing demands

Wearable Devices
- Offer post-purchase services
- Sell new wearable every 3-5 years

Cloud System
- Improve or design new security system
- Provide new features for healthcare providers

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