The Flex Innovation System

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Our Innovation Journey...

Build-to-Print

Sketch-to-Scale™
Flex Innovation System

Cultivate Technology and Provide Market Access
» LabIX
» Collective Innovation Platform (CIP)
» Technology Centers of Excellence (CoE)
» Flex Smart & Connected Solutions (FSC)

Product Development/
Identify Opportunities (Sketch)
» Innovation Labs
» Multek Interconnect Technology Center (ITC)
» Innovative Connected Emerging Technology Group (ICE)
» Innovation Centers
» Global Design Centers
» Cloud Labs
» Flex Power
» Flex Digital Health
» Flex Lighting Solutions
» Flex Living (Residential/Commercial)
» Advanced Engineering Group (AEG)

Commercialization (Scale)
» Product Introduction Centers (PIC)
» Centers of Competence (CoC)
» Manufacturing Sites
» Global Services and Solutions / Logistics
» Active Tracking (Pulse)
» Financial Supply Chain Design (FSCD)
» Elementum
Growing our Innovation System

5 Innovation Centers | 9 Product Introduction Centers | 25+ Design Locations | 3000+ Design Engineers

- Vancouver, Canada
- San Francisco, CA
- Austin, TX
- Dallas, TX
- Farmington Hills, MI
- Coopersville, MI
- Troy, MI
- Toronto, Canada
- Silicon Valley, CA
- Fremont, CA
- Guadalajara, MX
- Austin, TX
- Dallas, TX
- Farmington Hills, MI
- Coopersville, MI
- Troy, MI
- Toronto, Canada
- Silicon Valley, CA
- Fremont, CA
- Guadalajara, MX
- Boston, MA
- Hollis, NH
- New York, NY
- Raleigh, NC
- Atlanta, GA
- San Francisco, CA
- Austin, TX
- Dallas, TX
- Farmington Hills, MI
- Coopersville, MI
- Troy, MI
- Toronto, Canada
- Silicon Valley, CA
- Fremont, CA
- Guadalajara, MX
- Boston, MA
- Hollis, NH
- New York, NY
- Raleigh, NC
- Atlanta, GA
- Milan, Italy
- Althofen, Austria
- Toronto, Canada
- Ottawa, Canada
Expanding Our Co-Innovation Capabilities

We are growing our product development scope and depth.
Identifying Transformative Opportunities

History has shown inflection points in the past. We are at a new inflection point.
Next Key Transformations for Intelligence of Things™

**AI**
- Machine learning
- Voice interaction

**5G**
- Low cost cellular

**AR/VR**
- New IoT platform

15% cost saving
from predictive maintenance and vision-based parts inspection

10x data speed
to support AR/VR, autonomous vehicles, on-demand video and cloud-based applications

65% AR adoption
planned by enterprise companies over next 3 years

$3 Trillion+
potential impact of IoT in factory setting

Source: ZDNet research survey, McKinsey Global Institute “Mapping the Value Beyond the Hype”
Case Study: AR/VR for Manufacturing

Pricing a complex Configure-to-Order manufacturing opportunity

**Background**
- 5 weeks to quote, assemble and validate data center rack with many parts and complicated assembly
- Worldwide 250K+ product SKUs assembled
- Time consuming and error prone to price project
- Difficult to recover cost if build cost higher than initial quoted price

**Solution**
- 5 days to “virtually build” product, generate quote and validate costs
- Flex-developed VR application avoids manual process

**Benefit**
- Accurate price quotes in days not weeks
- Applies to multiple business segments
Case Study: AI for Manufacturing

AI enhanced approach to assembly

**Background**
- Unnecessary handling, bending and operations cause variance
- 5 Billion+ individual human operations annually performed during product assembly
- Improve repeatability, quality and ergonomics for workers
- Optimize process to replicate and scale

**Solution**
- Digitize human operations to identify and recommend improvements
- Pilot project uses machine vision and algorithms to digitize human activity, "learn" assembly process and mentor

**Benefit**
- 10%+ potential quality and productivity improvement
- Improved worker ergonomics and engagement in process

Traditional Approach

AI Enhanced Approach
Case Study: 5G Infrastructure Projects

**Background**
- IoT device and data volume will exceed existing cellular capacity
- Telecoms are investing $6B in 5G R&D pilots over next 4 years
- 5G infrastructure market exceeds $250B globally

**Solution**
- Flex Sketch-to-Scale expertise in centralized radio area networks (C-RAN) applies to 5G infrastructure
- Telecoms can leverage Flex facilities for RF testing and certification

**Benefit**
- 5x less latency for on demand video
- 10x less expensive to embed in IoT devices
- 100x more connected devices supported
- 1,000x more data volume
Design-Enabled Business Impact

Sketch-to-Scale solutions deliver greater value

**Design Win Growth**

- FY15: 330+
- FY16: 400+
- FY17: 450+

>75% Design Center projects are Sketch-to-Scale

**Sketch-to-Scale Manufacturing Revenue**

- FY13: 7%
- FY17: 23%
- FY20E: 40%

>230 patents issued in CY 2017
Developed a comprehensive innovation system

Majority of new design engagements are **Sketch-to-Scale**

Leading development of next foundational digital technology advances

Next digital disruptions will generate **>$6T** economic impact