2019 PDF Solutions
Analyst Day
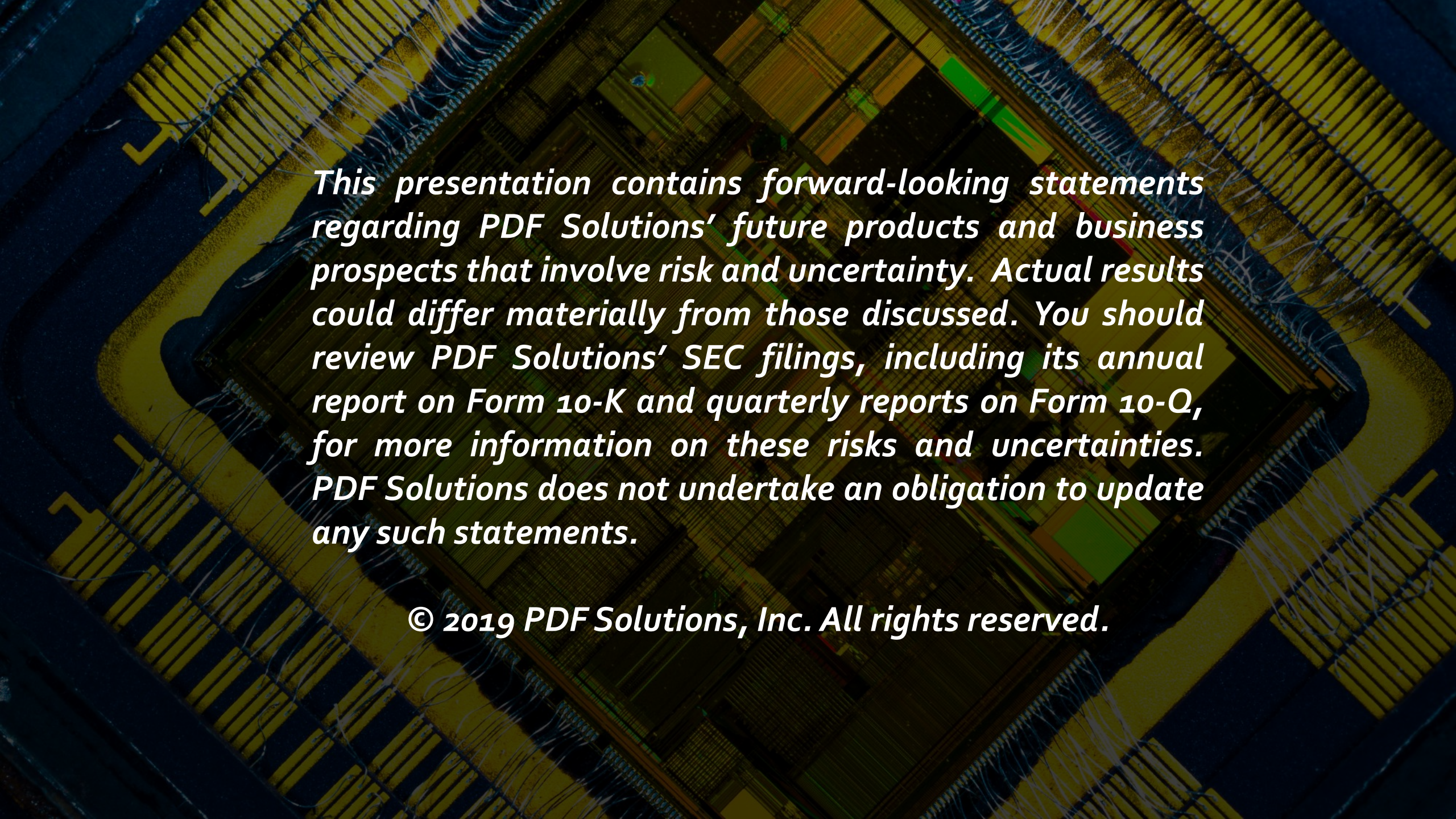
PDF/SOLUTIONS™

S1.6A – Field Overview

October 15, 2019

PK Mozumder, VP of WW Sales
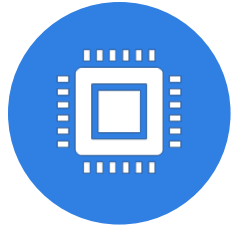
Michael Yu, VP of Sales, Asia

This presentation contains forward-looking statements regarding PDF Solutions' future products and business prospects that involve risk and uncertainty. Actual results could differ materially from those discussed. You should review PDF Solutions' SEC filings, including its annual report on Form 10-K and quarterly reports on Form 10-Q, for more information on these risks and uncertainties. PDF Solutions does not undertake an obligation to update any such statements.
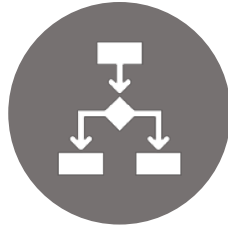
PDF Solutions: Spanning the Supply Chain

IC Design · **Fab** · **Sort** · **Assembly** · **Test** · **System**

Data
- CV*i* & CV® Core
- DFI™
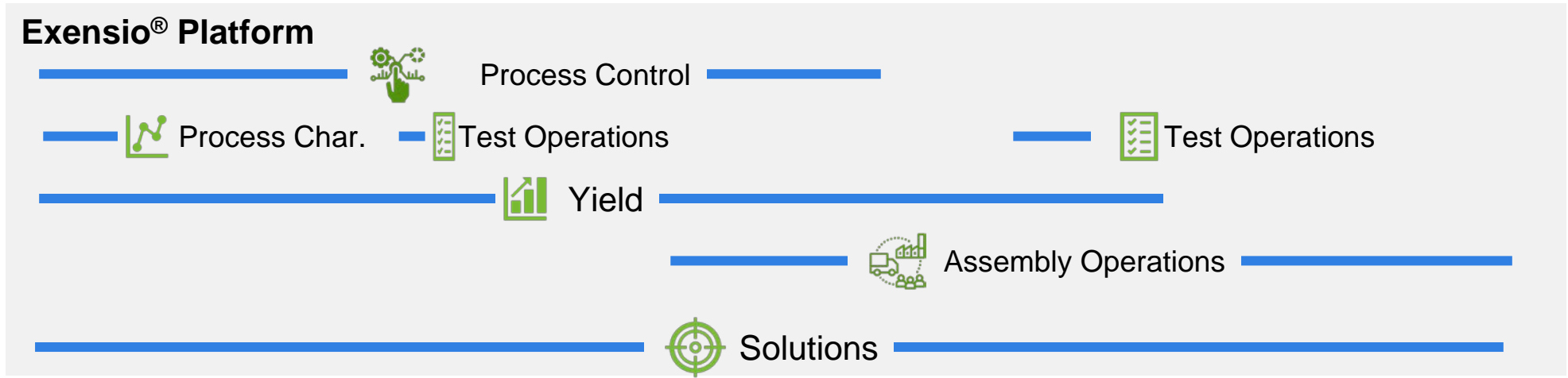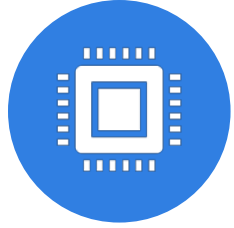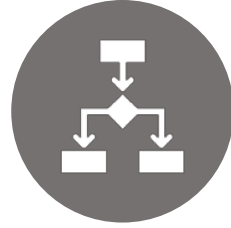
Software
- Fire
- **Exensio® Platform**
  - Process Control
  - Process Char.
  - Test Operations
  - Test Operations
  - Yield
  - Assembly Operations
  - Solutions

Growth Strategy

IC Design	Fab	Sort	Assembly	Test	System

Land — We have leading IP & a customer foundation based on years of Integrated Yield Ramp and Exensio deployments

Expand — We are targeting expansion and adoption of our analytics at existing and new customers

Collaborate — We are enabling efficient data and analyses sharing among partners with our supply-chain wide analytics

High-Level Growth Strategy: Land, Expand, Collaborate

o "Expand the Landed"

- Our analytics growth has been fastest in our largest customers
- PDF can provide more value to customers via multiple products and solutions
- PDF's managed services provides customers with better system and data quality
- Industry focus on enterprise analytics and cloud solutions is a growth opportunity
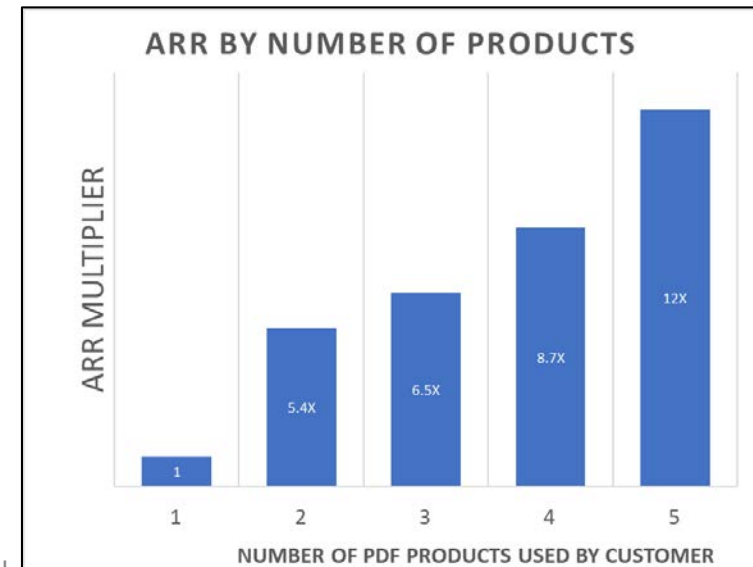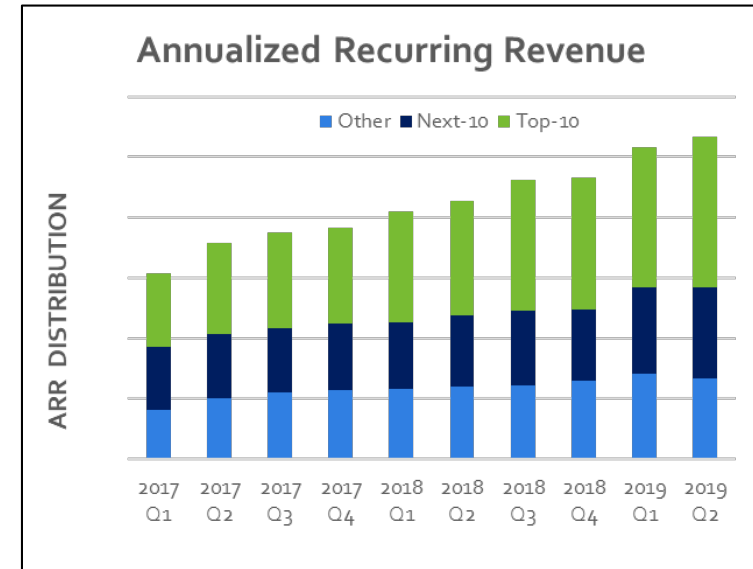- Platform enables distribution of new capabilities to broad customer base

o Greenfield & Emerging Co.'s

- PDF's analytics can be applied to adjacent and emerging markets
- Substrate fabs, OSATs, and system companies have increasing needs for analytics
- OEM'ing Exensio® to the supply chain can provide integral solutions
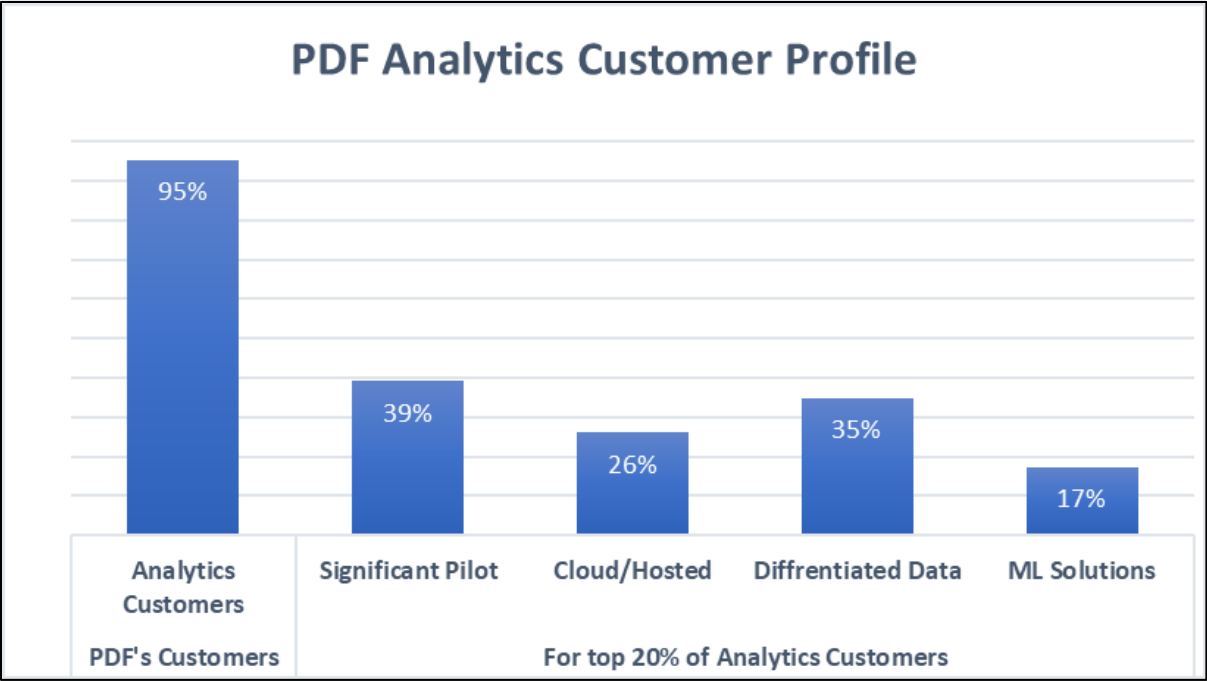
o Collaboration

- Won and expanded business with customers due to strong presence with their partners which eases data sharing and coordinated analyses

o **Analytics ARR CAGR=31%; 2014 through YTD Q2, 2019 with "Land, Expand, and Collaborate" strategy**

Annualized Recurring Revenue

Other — Next-10 — Top-10

ARR DISTRIBUTION

2017 Q1, 2017 Q2, 2017 Q3, 2017 Q4, 2018 Q1, 2018 Q2, 2018 Q3, 2018 Q4, 2019 Q1, 2019 Q2

ARR BY NUMBER OF PRODUCTS

ARR MULTIPLIER

1, 5.4X, 6.5X, 8.7X, 12X

1   2   3   4   5

NUMBER OF PDF PRODUCTS USED BY CUSTOMER
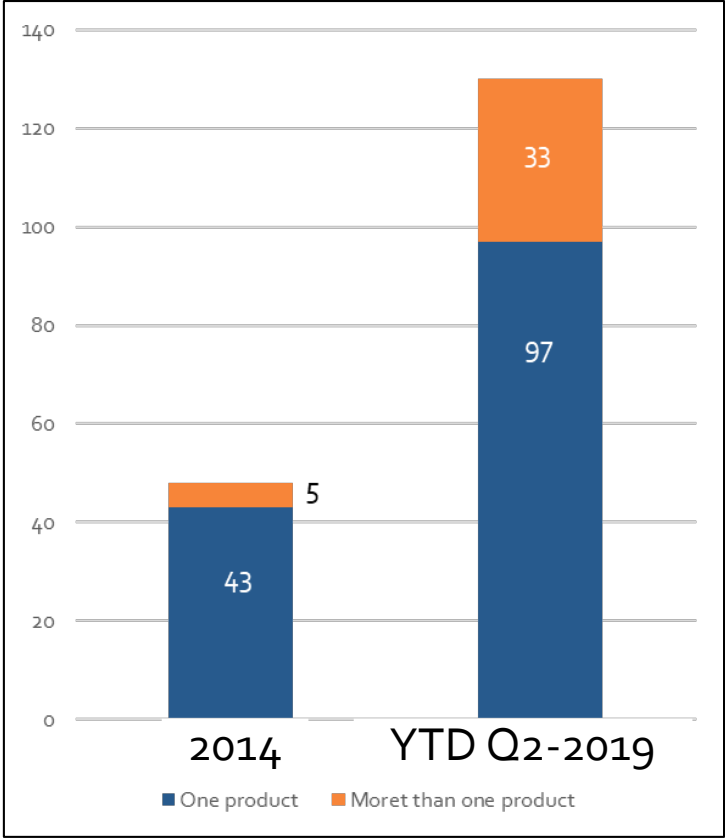
PDF/SOLUTIONS™

Customer Profile, Retention, and Adoption

o A growing customer base that views PDF as **"only company with cutting-edge analytics platform and deep domain expertise"**

o Ml/AI enabled platform leveraging learnings & innovations for 3 decades

    – ~15,000 engineers trained and using PDF analytics worldwide

    – 700 Characterization Vehicles deployed for differentiated data
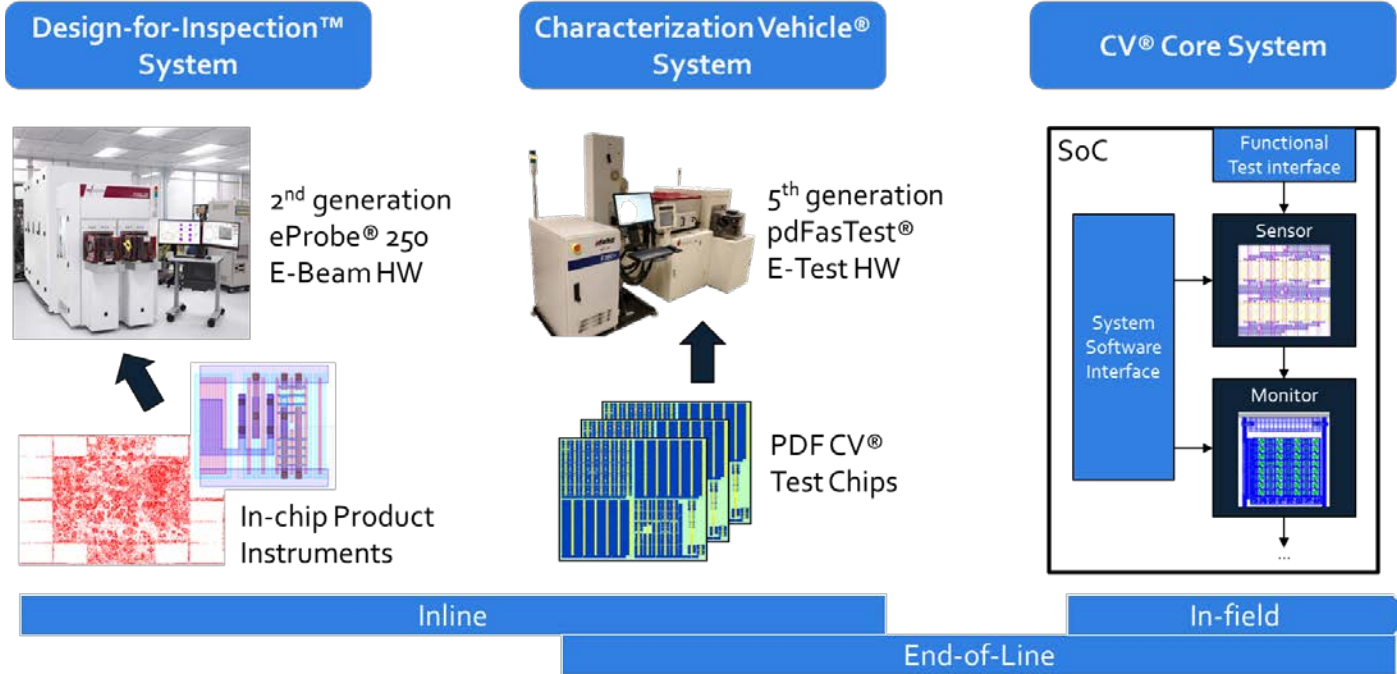
PDF Analytics Customer Profile

95%	39%	26%	35%	17%
Analytics Customers	Significant Pilot	Cloud/Hosted	Diffrentiated Data	ML Solutions
PDF's Customers	For top 20% of Analytics Customers			

Number of customers

93%   *Retention rate*   **97%**

2014: One product 43, More than one product 5

YTD Q2-2019: One product 97, More than one product 33

■ One product ■ Moret than one product
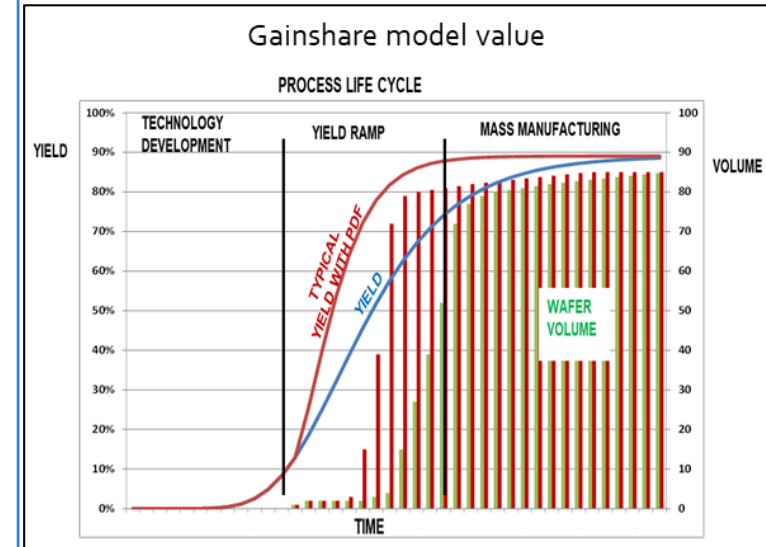
Solutions for Leading-Edge Customers

- o For leading semi companies, PDF provides unique electrical characterization IP via a subscription model
- o For competing foundries:
  - – Gainshare model enables PDF to partner in achieving competitive time to volume
  - – In mass production, subscription model enables customer to leverage PDF IP broadly
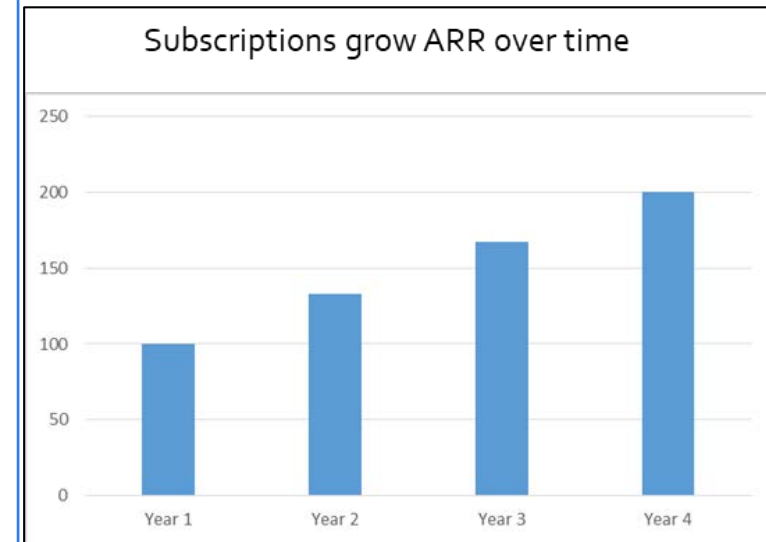
PDF Solutions Customer Growth & Acquisition

130 customers in **20** countries spanning fabless, fab, OSAT, and system

**#1** commercial solution for mfg yield and control with large cloud customer base

#2 and **fastest growing** commercial provider in mfg test operations leveraging DEX network

Leading commercial provider die traceability through the supply chain

o Integrated Yield Ramp sales are software + data with service teams

o Analytics sales include software-only and software + data with application support

o Field team using proven value delivery with worldwide executive relationships to fuel customer growth and collaborative acquisitions
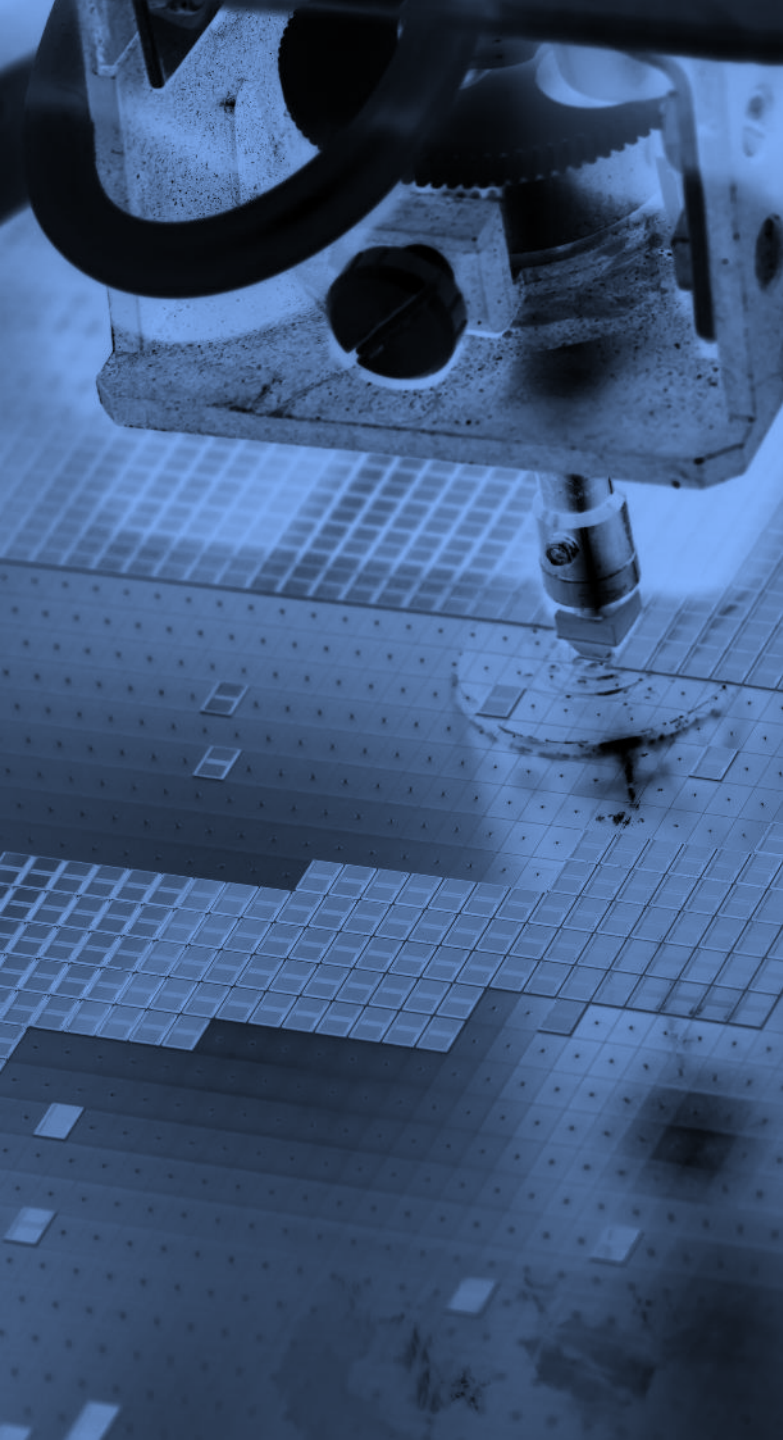
Asia Business

Highlights

o Analytics

– We are investing in 2019 to grow Exensio business in 2020 in Asia

– We expect significant traction in DFI area in Asia in 2020, for both logic and memory segment, mostly driven by fabs need at advanced nodes
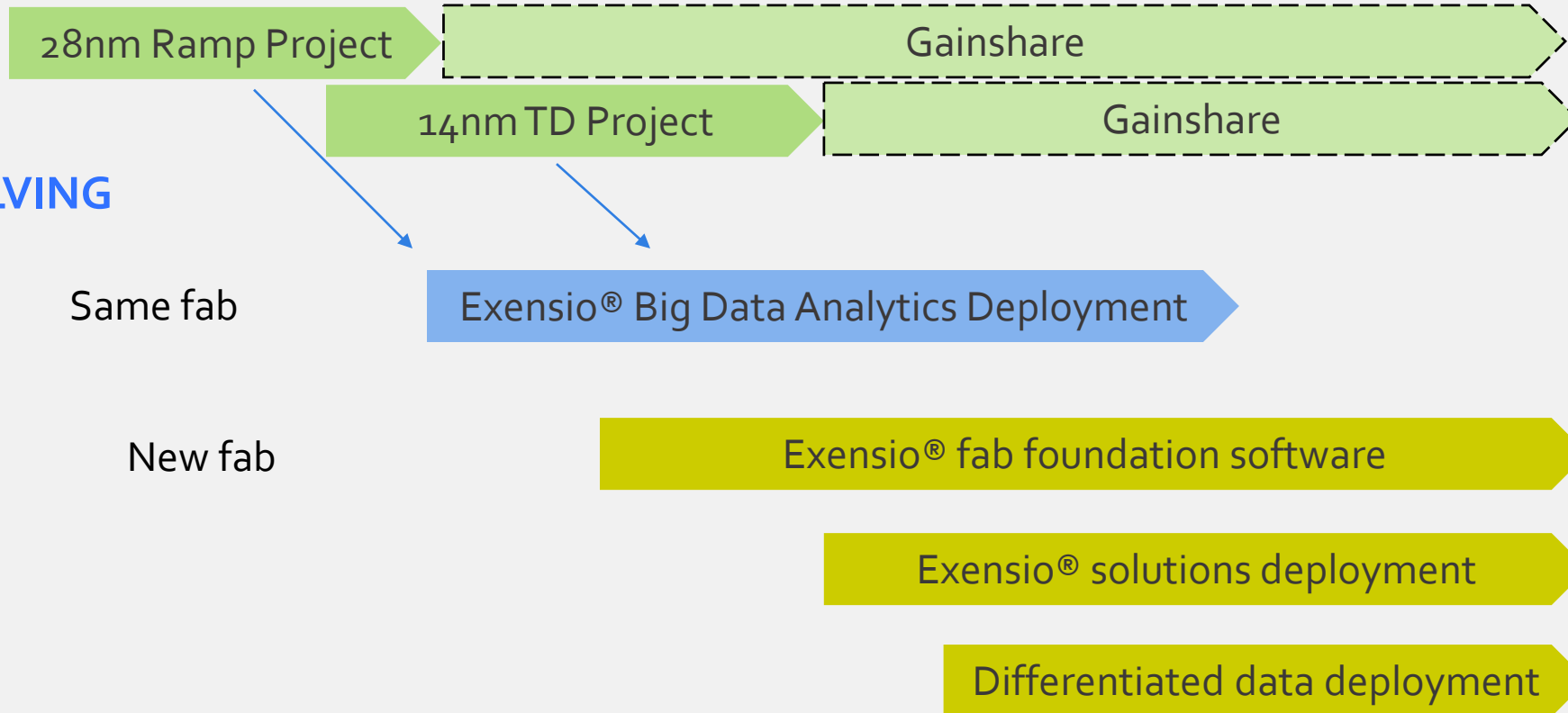
o Integrated Yield Ramp (IYR)

– Still significant demand from China, given renewed government investments in this area. Volume has been slow to materialize.

– Transition to subscription business model

Expand the Landed

HISTORY

EVOLVING

- 28nm Ramp Project → Gainshare
- 14nm TD Project → Gainshare
- Same fab — Exensio® Big Data Analytics Deployment
- New fab — Exensio® fab foundation software
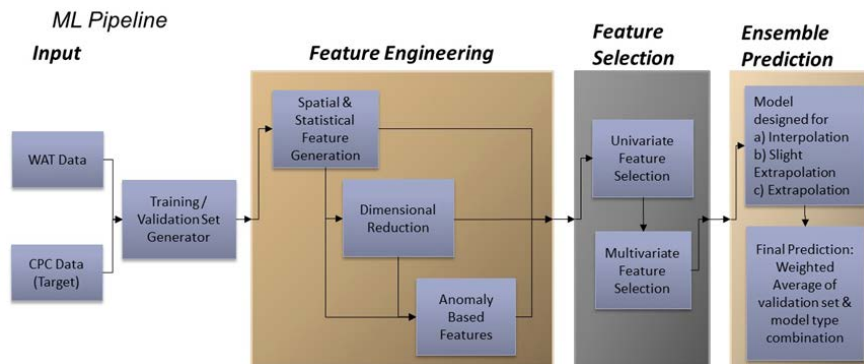- Exensio® solutions deployment
- Differentiated data deployment

- Customer transitions into more-than-Moore

- Customer started to adopt PDF's Analytics platform

- And grow the width and depth of adoption

2014 ← → 2019
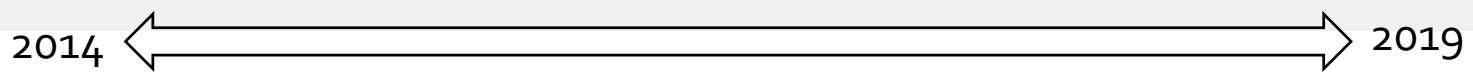
Analytics: Exensio – "A Tale of Two Cities"

Taiwan, Japan, Korea

o Customers poised to leverage PDF's ML/AI enabled solutions as well as base Exensio® platform

o Several pilots underway in 2019 to position us in for growth in 2020

Mainland China

o Many opportunities on paper. Reality could be quite different

- Many new fabs announced
- # of fabless grow from 1,500 in 2018 to 3,000 in 2019
- Increase of OSAT to meet domestic demand

o We are working with customers on 5-year plan, starting with foundation first before ready to jump into ML/AI

- New fabs: Exensio® Foundry
- Fabless: Exensio® Fabless

o Releasing Exensio® Hosted Cloud based solution for China fabless, under freemium business model

- Rollout : starting next week in Shanghai

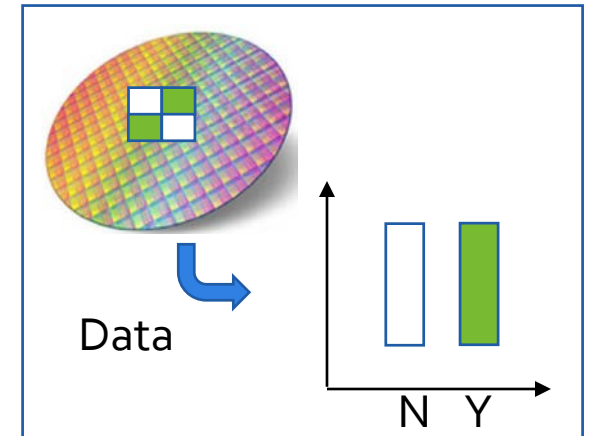# Analytics : DFI™ as Differentiated Data

o 2019
  – Multiple DFI™ systems installed in Asia: in Taiwan and mainland China
  – Measured wafers from Taiwan, China, Japan, Korea
 – Successfully penetrated into production environment installation

o 2020
  – Key goals
    – have DFI™ systems installed at 3 of 4 (Taiwan, China, Japan, Korea)
    – have multiple DFI systems installed at the same client for mass production application
    – have proven memory application
  – Intended result: significantly grow DFI related booking from Asia

Logic

Data

N   Y

3D Flash

measured
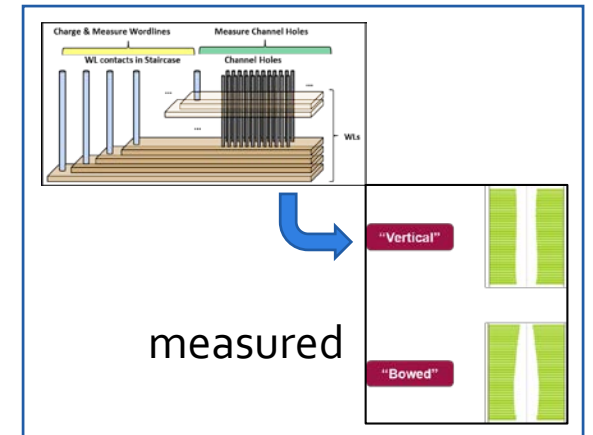
Focused Greenfield Plan in Asia

Automotive

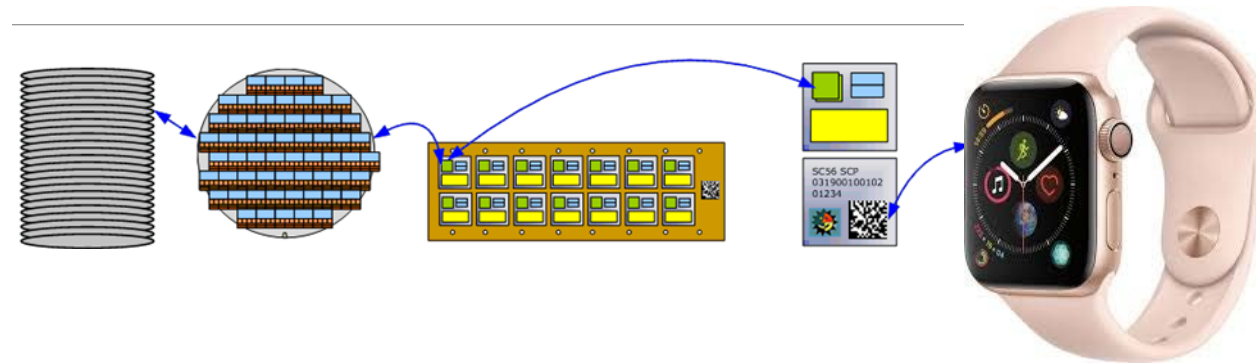o Auto supply industry investing in analytics

o PDF provides the differentiated data (CV® Core + DEX™) and Exensio® platform necessary for quality and reliability solutions

System Companies

o Requirement for system company is more and more similar to semiconductor industry. System company needs Industry 4.0 to be effective

– Our infrastructure is deployed across the whole supply chain

o Targeted solution: DEX™ + Exensio® for system-level optimization

Integrated Yield Ramp: China Focus

Advanced Node

o China government has renewed investment for advanced logic segment as well as memory

o Except common R&D investment in Analytics, PDF does not expect any significant R&D investment in "classic" to support those nodes. Instead, PDF will adjust our methodology to use new products to serve those customers

Mature Node

o In addition to advanced node, there are also needs to serve mature nodes in China

    – PDF has off-the-shelf technology & capability in China to serve those customers with minimal investment

    – Sweet spots for PDF is 40nm – 90nm logic including derivative

o We are changing our business model from Gainshare to subscription business model

    – 1st batch will target multiple key customers

    – "Differentiated Data" approach
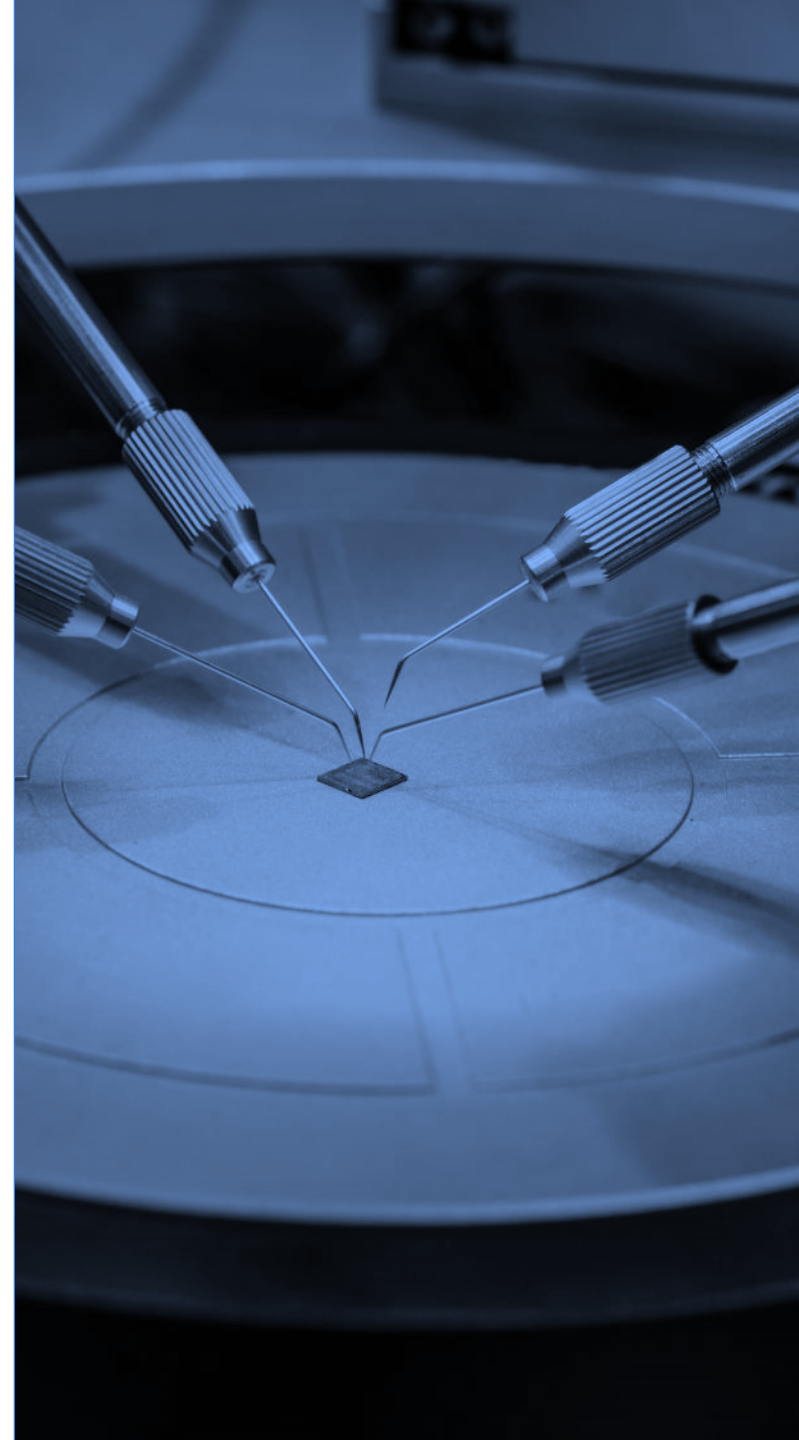
Strengthen Asia Business Unit

o China

– Leverage freemium business model for the rapid growth of fabless

– Build local relationships

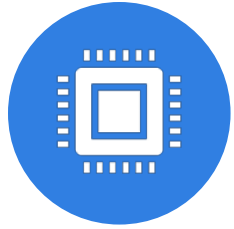– Expand the sales and marketing team

o Japan
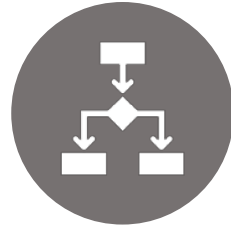
– Invest in Japan to strengthen executive relationships

PDF/SOLUTIONS™

Conclusion

Summary: PDF Fact Sheet

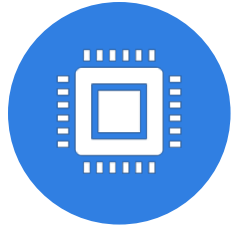**IC Design** **Fab** **Sort** **Assembly** **Test** **System**

- **Billions of** product layout structures analyzed by Fire engine

  o **>24,000** process tools under Exensio® Control

  o **>40 Billion** CV® DUTs tested in 2019

  o **>40 Billion** DFI™ DUTs measured in 2019

- **>16,000** tester + assembly tools under Exensio® Test / ALPS

- **>150** assembly equipment models supported

- **>15** DEX™ connected sites across major test facilities

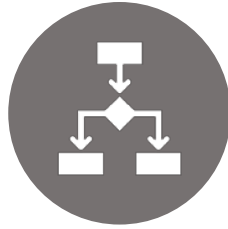- **>4,000 TB** data volume loaded in Exensio® DB world wide

Summary: Growth Strategy

IC Design	Fab	Sort	Assembly	Test	System

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Collaborate   We are enabling efficient data and analyses sharing among partners with our supply-chain wide analytics

Thank You

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