

Harmonizing your DX Strategy with PDF/R and MS Office Conversion/Viewing



Kevin Andresen

Senior Director of Business Development, Printers & Imaging,
Qualcomm Technologies, Inc.

kandrese@qti.qualcomm.com

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Kevin Andresen

Senior Director of Business Development, Printers & Imaging

Kevin Andresen is responsible for the Qualcomm® DirectOffice™ Document Conversion Software, IPS Print Language Interpreter and Quatro SoC products in the IoT revenue stream for Qualcomm Technologies, Inc.

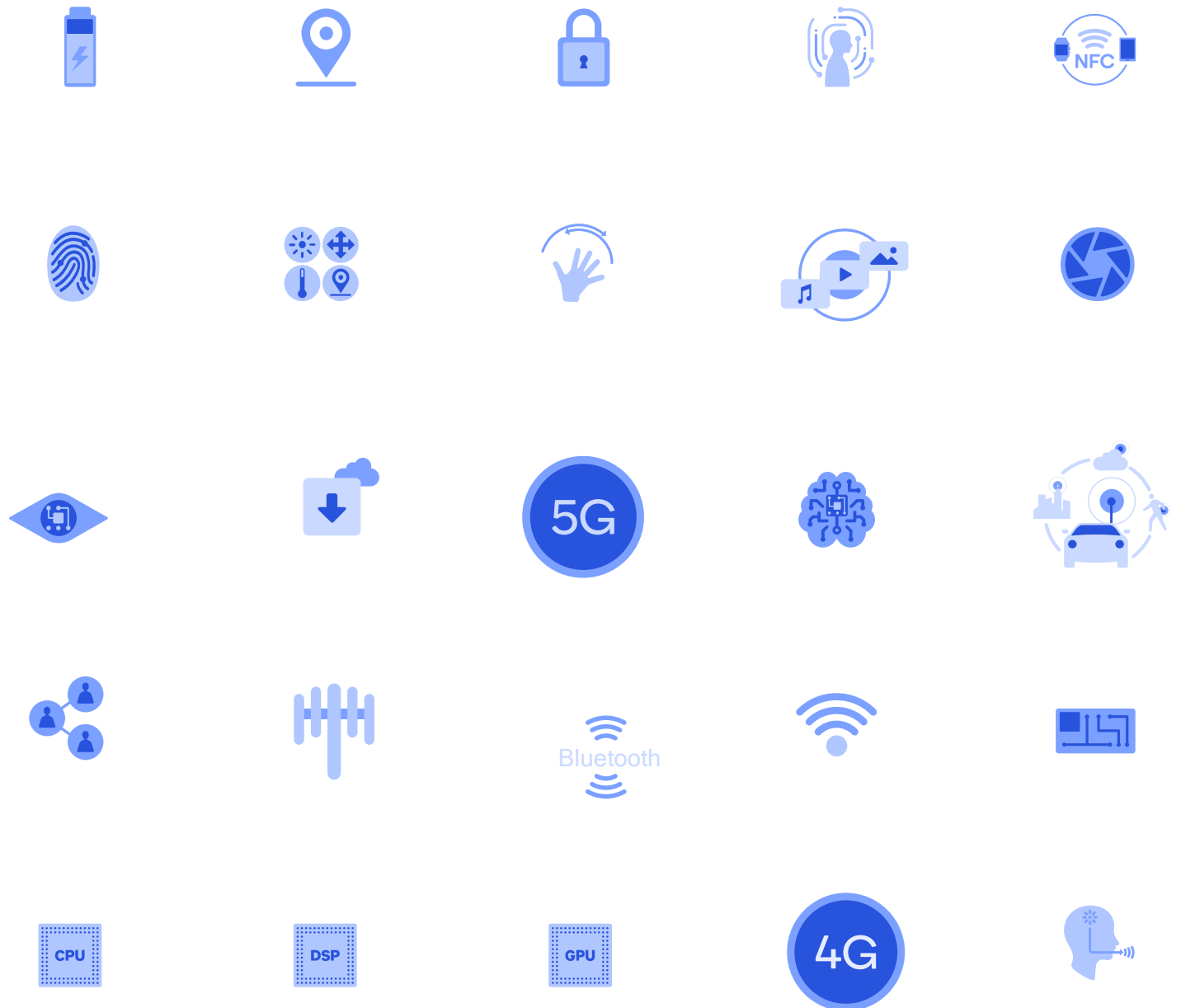
He has been a frequent panelist/presenter at industry conferences and tradeshow, and briefs analysts on topics related to document printing and viewing.



Qualcomm - Inventing breakthrough technologies that fuel innovation

\$80B+
Cumulative investment in R&D*

140,000+
Patents and patent applications**



*as of Q1FY23
**as of February 2022

Our Printers & Imaging business is the market leader* in:

PostScript /
PDF providers

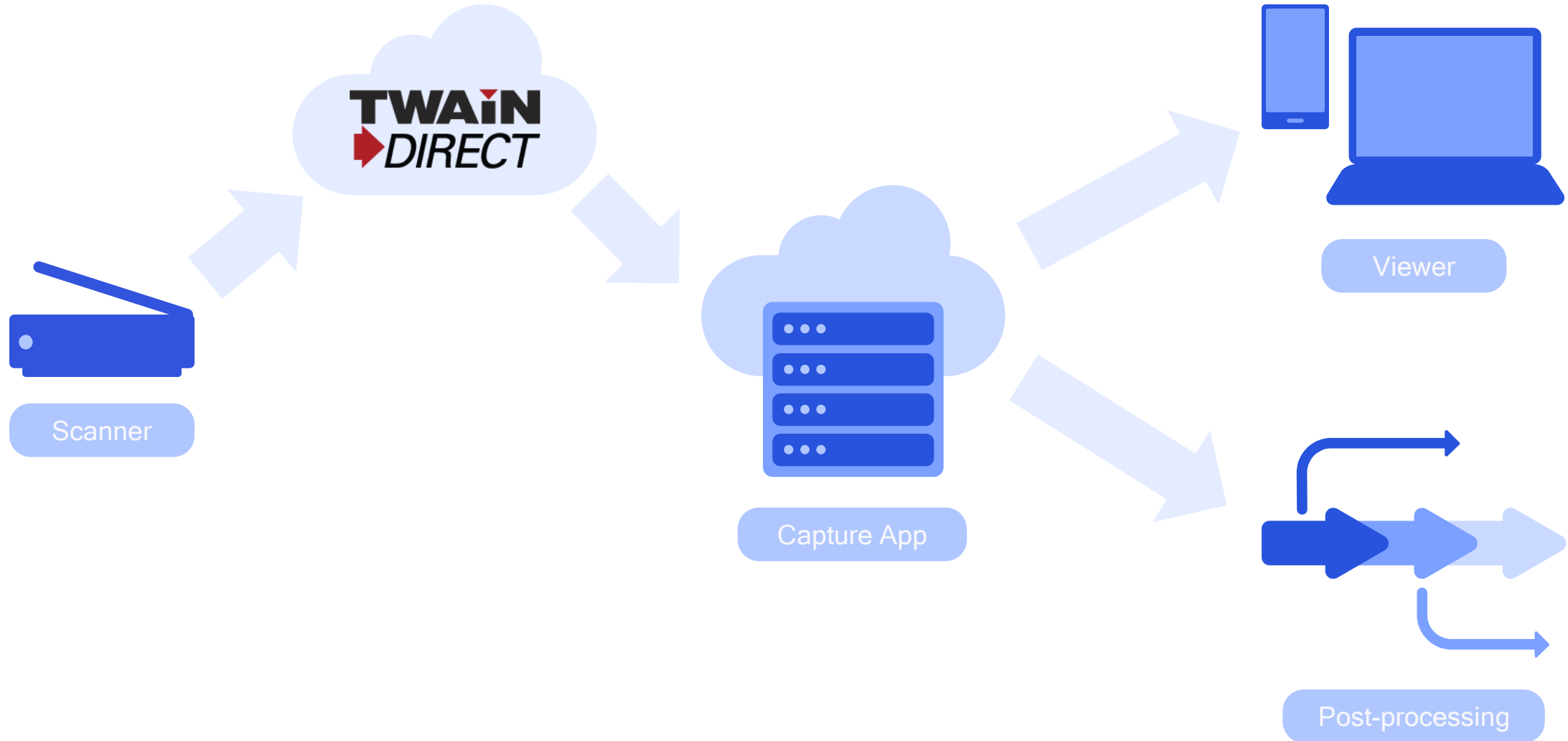
Merchant PCL
providers

Embedded
Office format
providers

Industry
leadership

*Based on the number of embedded printer/MFP units calculated from the U.S. Printer and MFP Market Shares, 2022:
Recovery Stalled by Product Shortages, Geoffrey Wilbur Keith Kmetz, 2022

TWAIN Direct workflow



Microsoft Office is widely used

Over 500 billion Office documents created each year¹



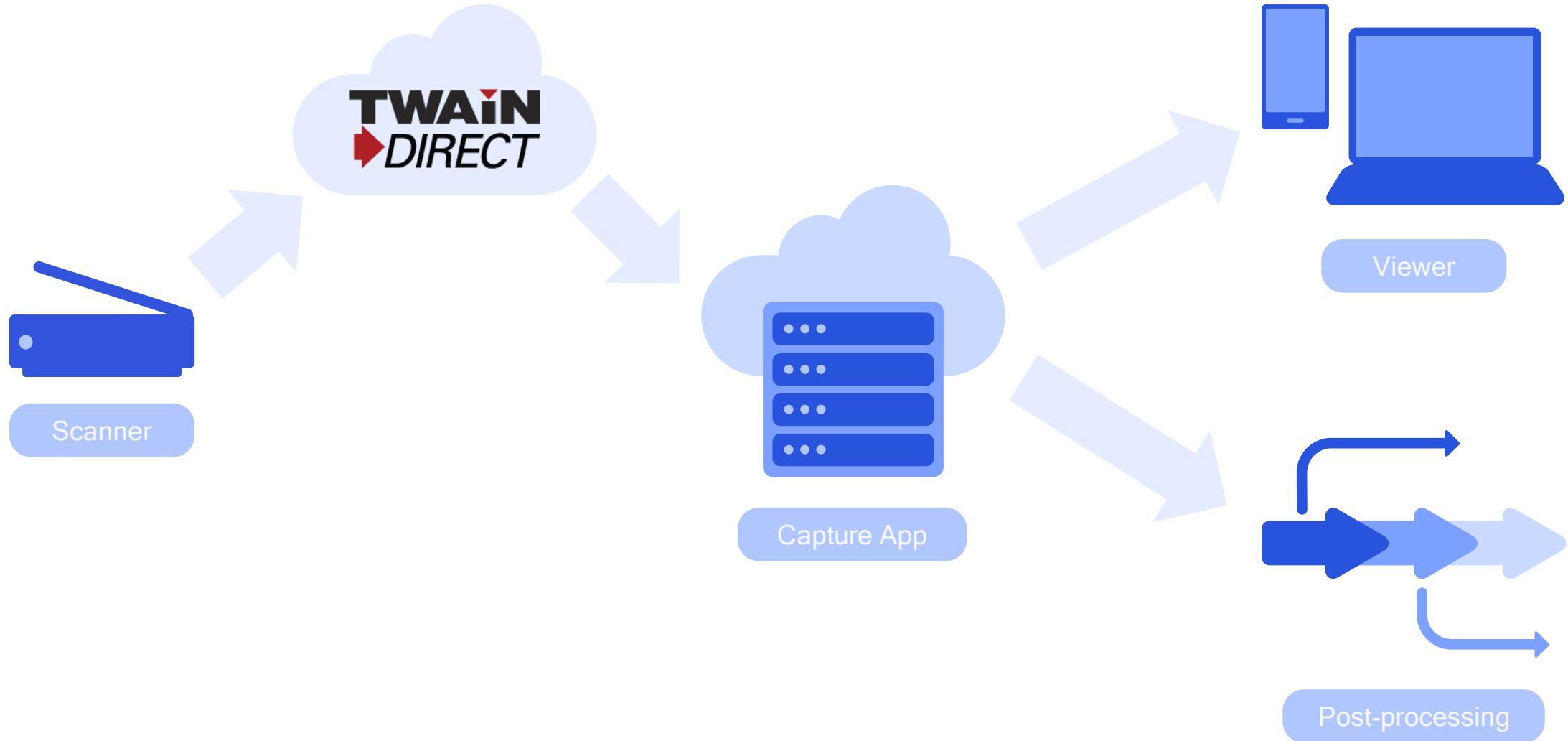
[1. Jay Yarow, Guess How Many Microsoft Office Documents Were Made Last Year, Business Insider](#)

Microsoft Office is widely used

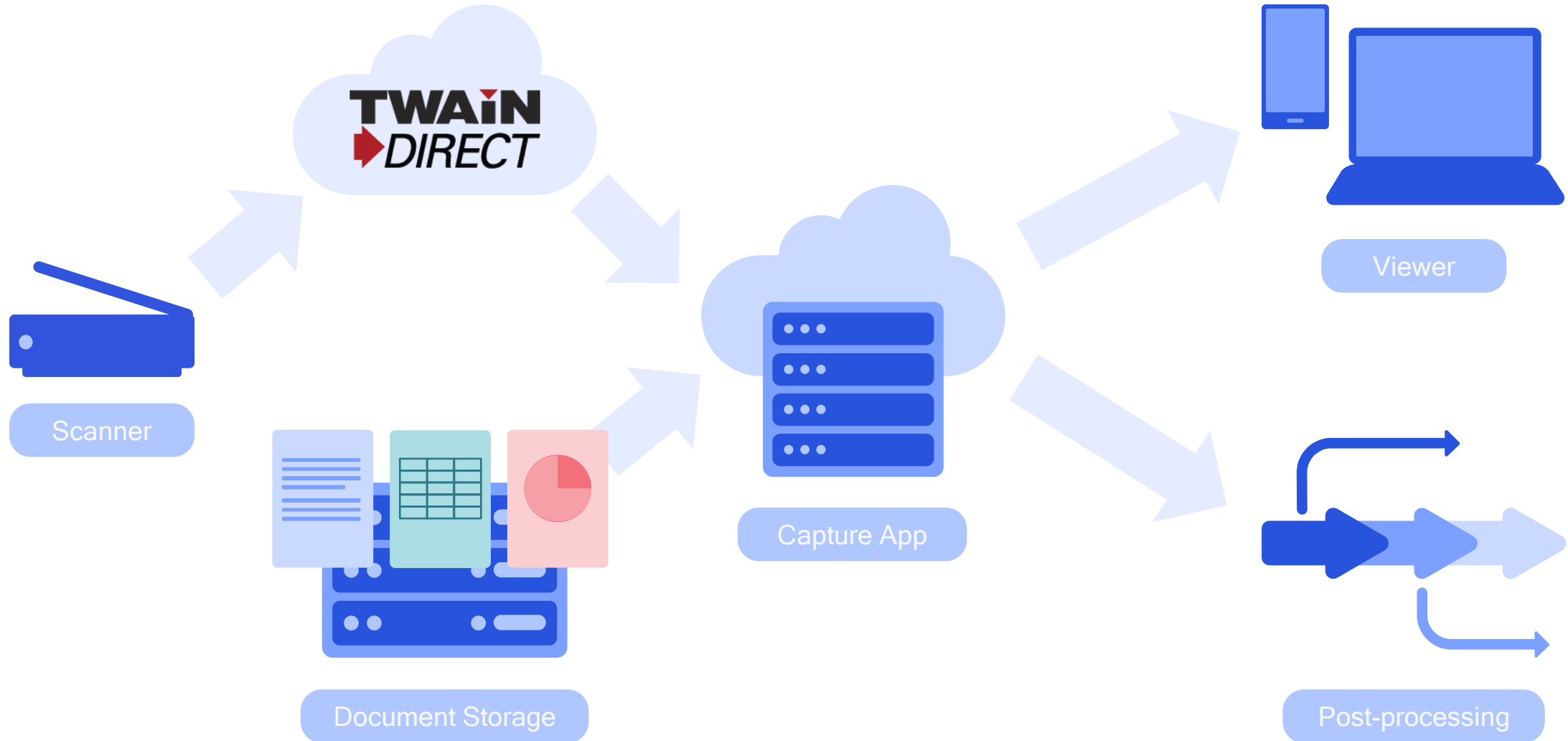
Over 500 billion Office documents created each year

- 
- Customer Proposals
 - Candidate /Employee Resumes
 - Engineering Designs
 - Product Roadmaps
 - Supplier Agreements
 - Financial Reports
 - Supplier Invoices
 - Credit Memos
 - Legal Case Reports
 - Legal Contracts
 - User / Product Training Guides
 - IT Incidents
 - System Reports
 - Asset Inventories & Investments
 - Part Pricing Lists
 - Facility Leases
 - Employee Staffing Forecasts
 - Merger and Acquisition Plans

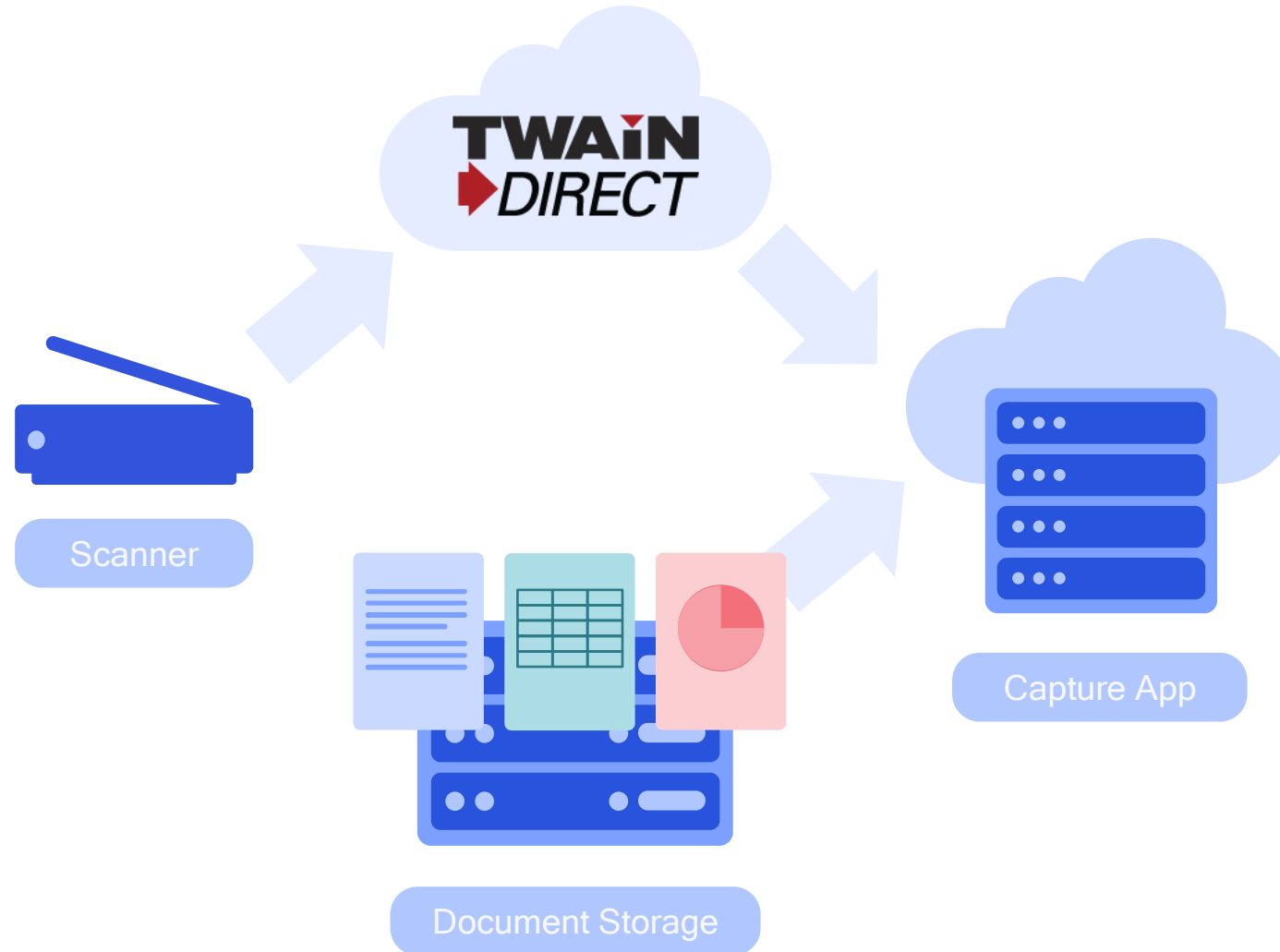
Hybrid workflow



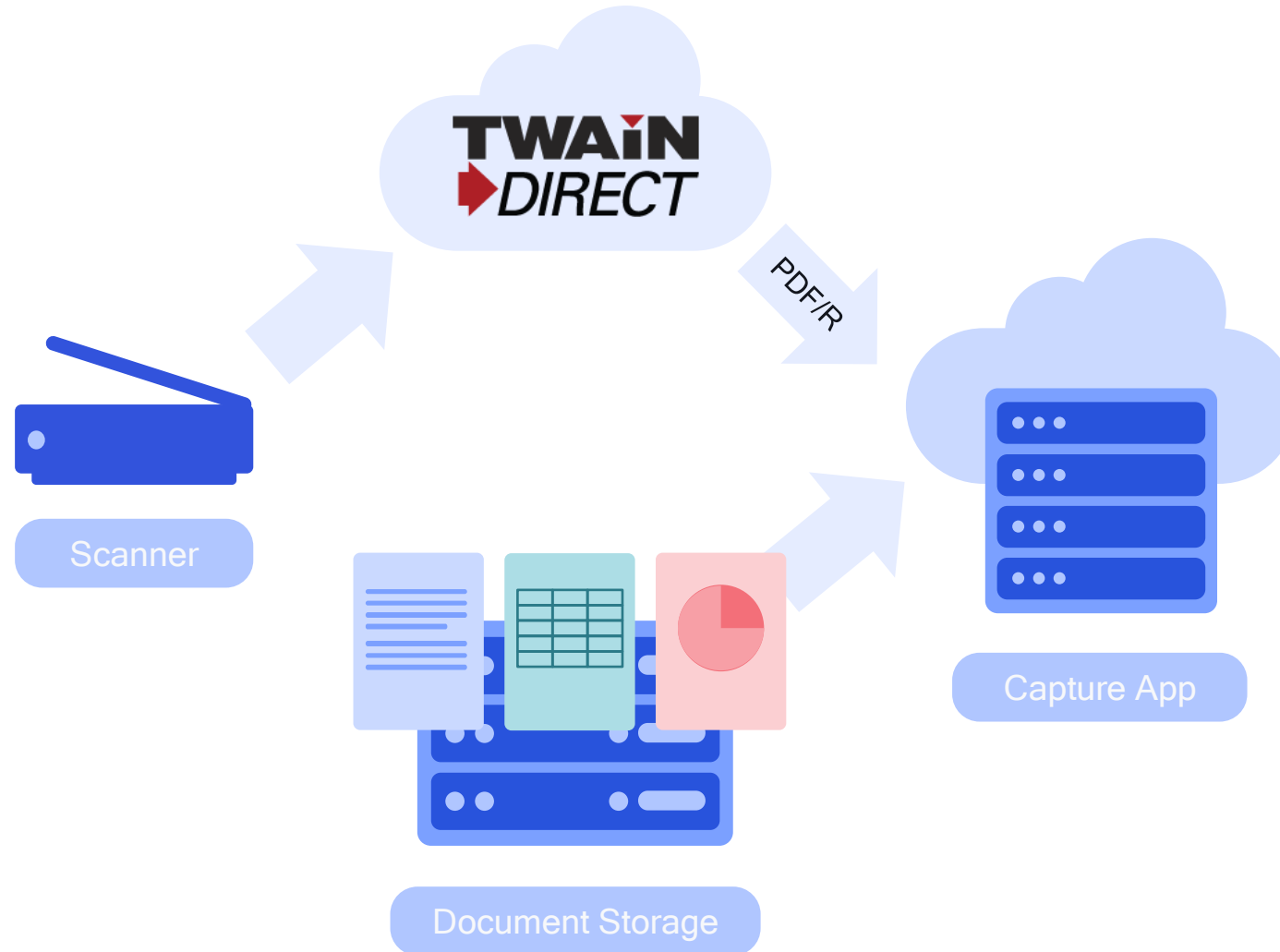
Hybrid workflow



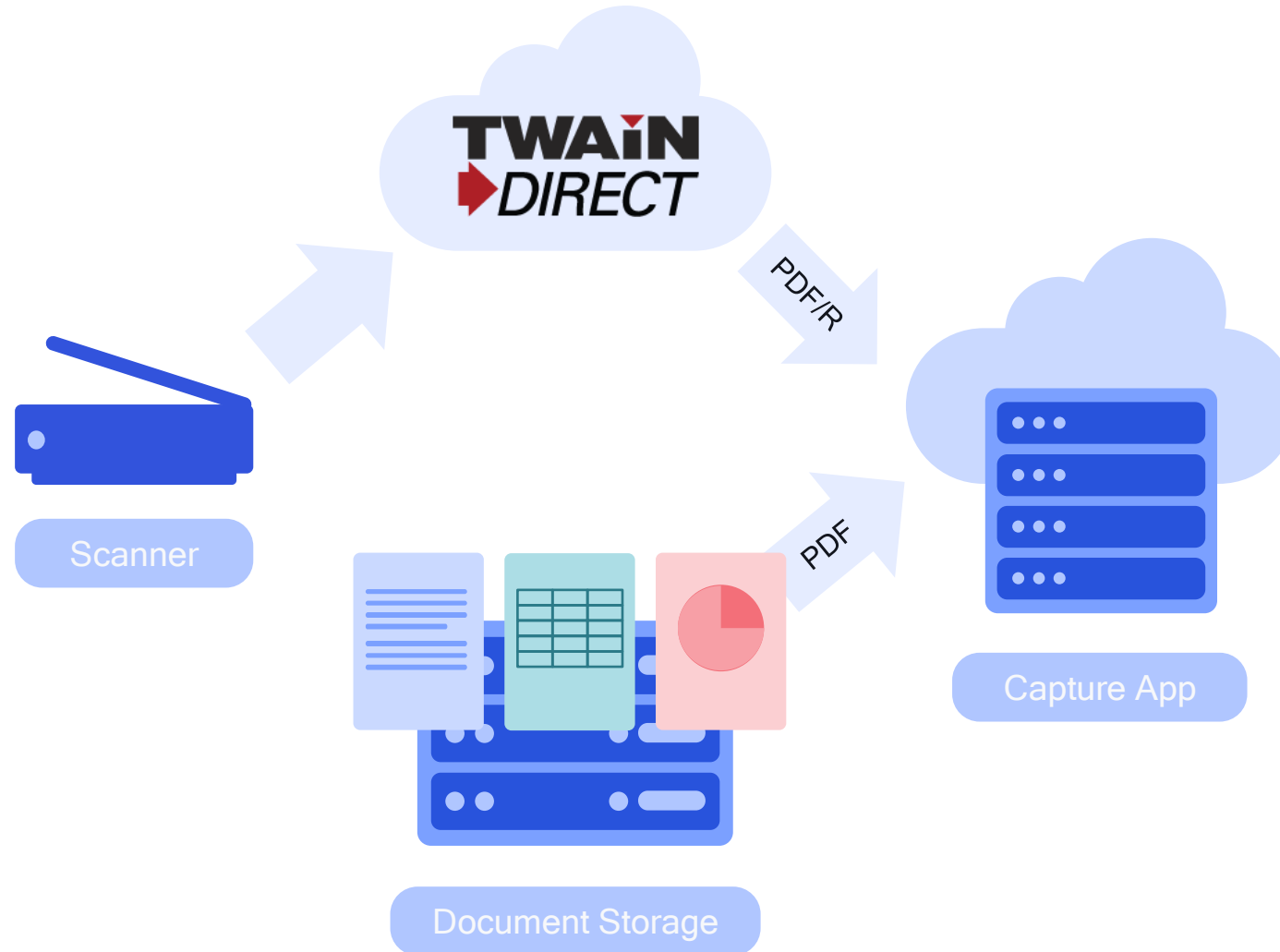
Upstream use cases



Upstream use cases



Upstream use cases



Digital transformation in upstream use cases



Brings unstructured
hardcopy into the digital
realm for intelligent
processing



Adds intelligent processing to
billions of unstructured
Microsoft Office documents



Eliminates the need to print
and scan

PDF can be the common factor

Added value with digital watermarks

Watermark text can increase document security by making screen shots more traceable

- Company
- User ID

Who?



- Doc title
- Doc ID
- Bates number
- Sensitivity label

What?



- Location

Where?

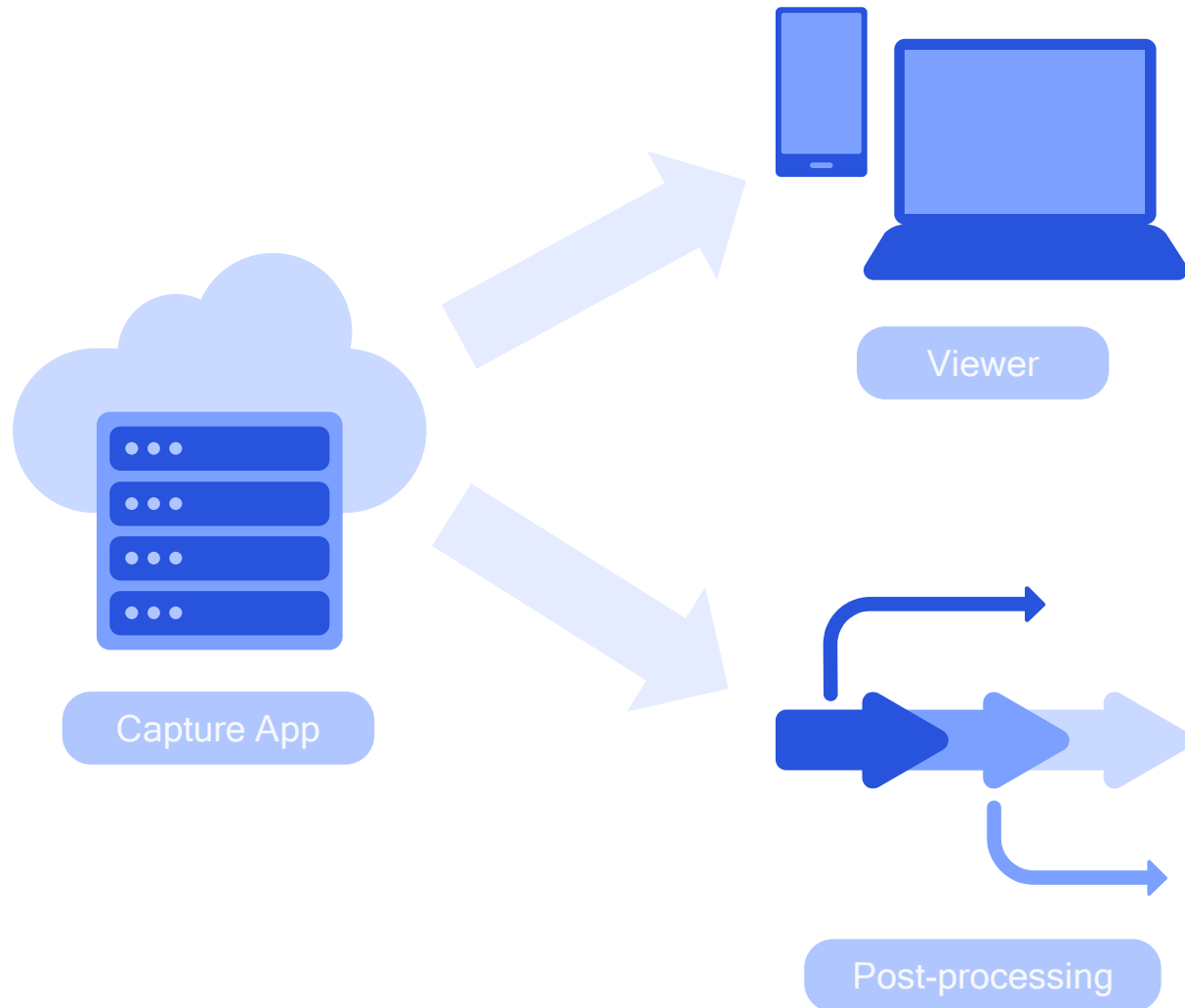


- Date
- Time

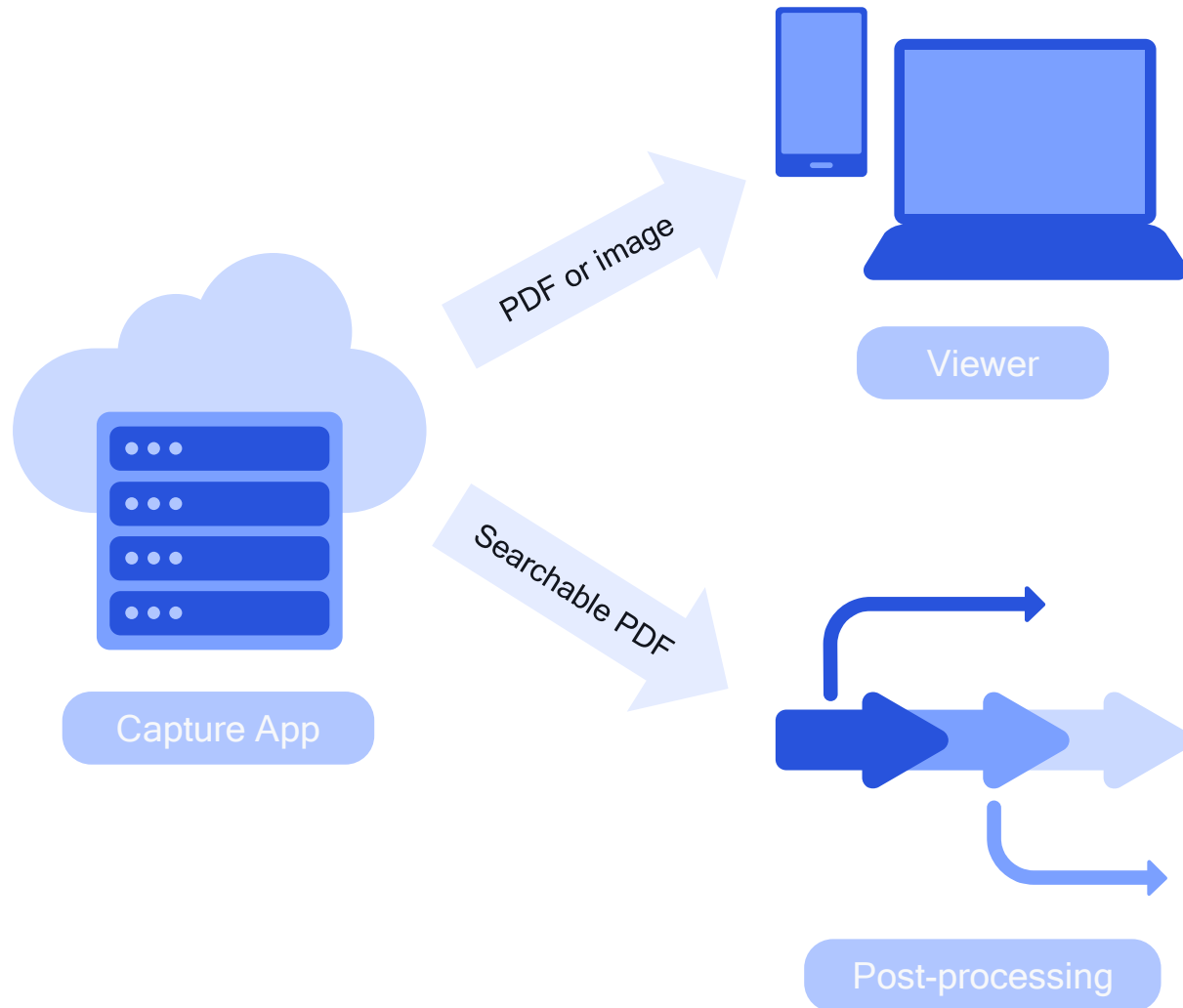
When?



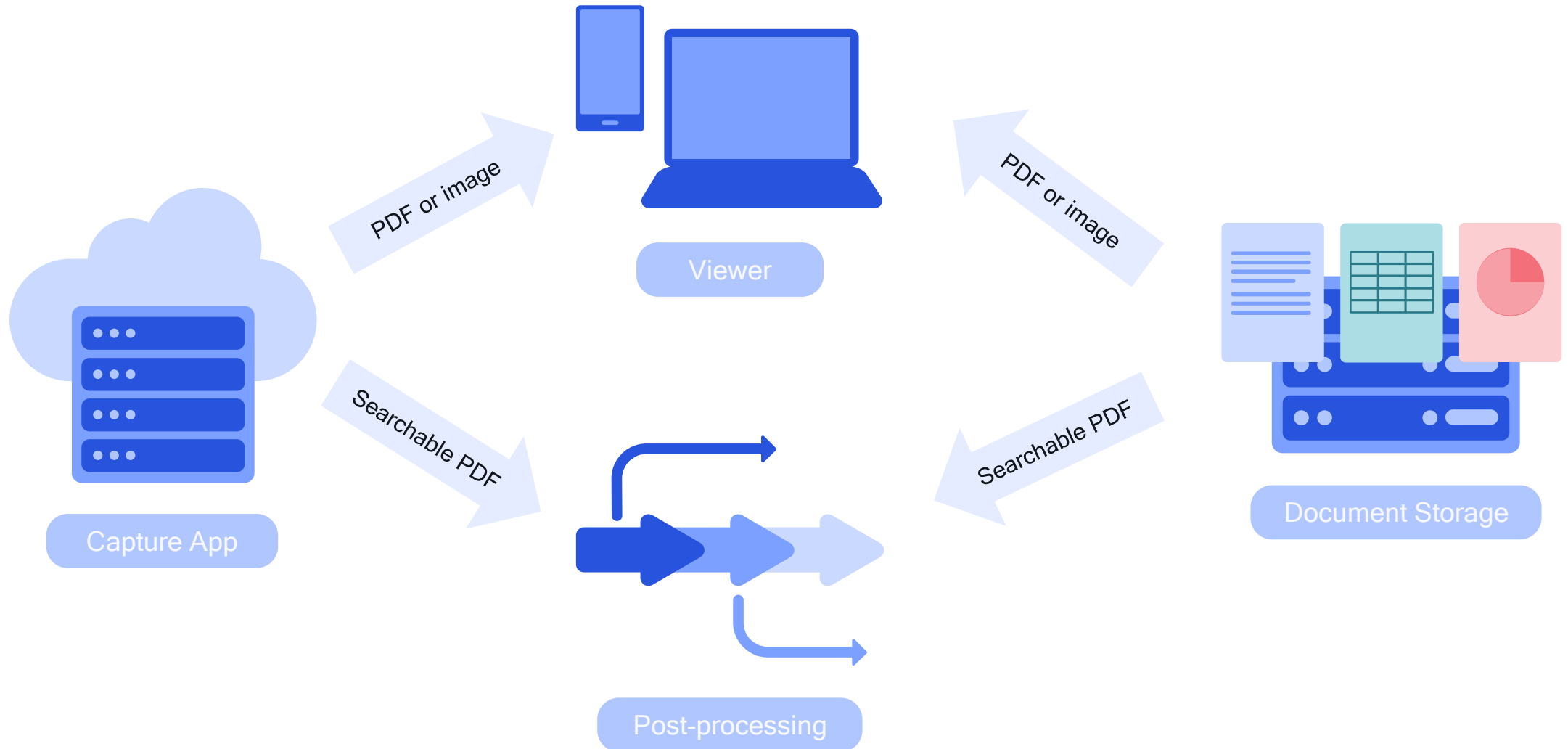
Downstream use cases



Downstream use cases



Downstream use cases



Downstream use cases



PDF workflow

- Searchable text
- Retain original metadata



Document viewer

- Legal review
- RPA HITL (Human in the Loop)

Harmonize PDF/R and Microsoft Office

Introducing Qualcomm® DirectOffice™ Document Conversion Software

Flawlessly displays or prints Word, PowerPoint, Excel & PDF documents with no need for Microsoft Office



Information Governance

- Read-only display of sensitive documents
- No downloading or use of 3rd-party apps
- Optional watermarks for added security



Improved User Experience

- Maintains original formatting & layout
- Patented font substitution technology
- Supports fast preview / in-line viewing



Consistency Across Platforms

- Same appearance on any platform - Web, Android, iOS, Windows, etc.
- Easily-integrated cross-platform SDK

Images are the same PowerPoint file using an alternative solution on different devices

Consistent secure Office file conversion inside your platform

Why Microsoft Office isn't a fit

Upstream conversion using 'Save as PDF'

License cost

Server limitations

Limited cloud portability

Poor font substitution

Upstream
use cases

“Microsoft does not currently recommend, and does not support, Automation of Microsoft Office applications from any unattended, non-interactive client application or component (including ASP, ASP.NET, DCOM, and NT Services), because Office may exhibit unstable behavior and/or deadlock when Office is run in this environment.”

Why Microsoft Office isn't a fit

Risky and unproductive

Information governance risk

Productivity

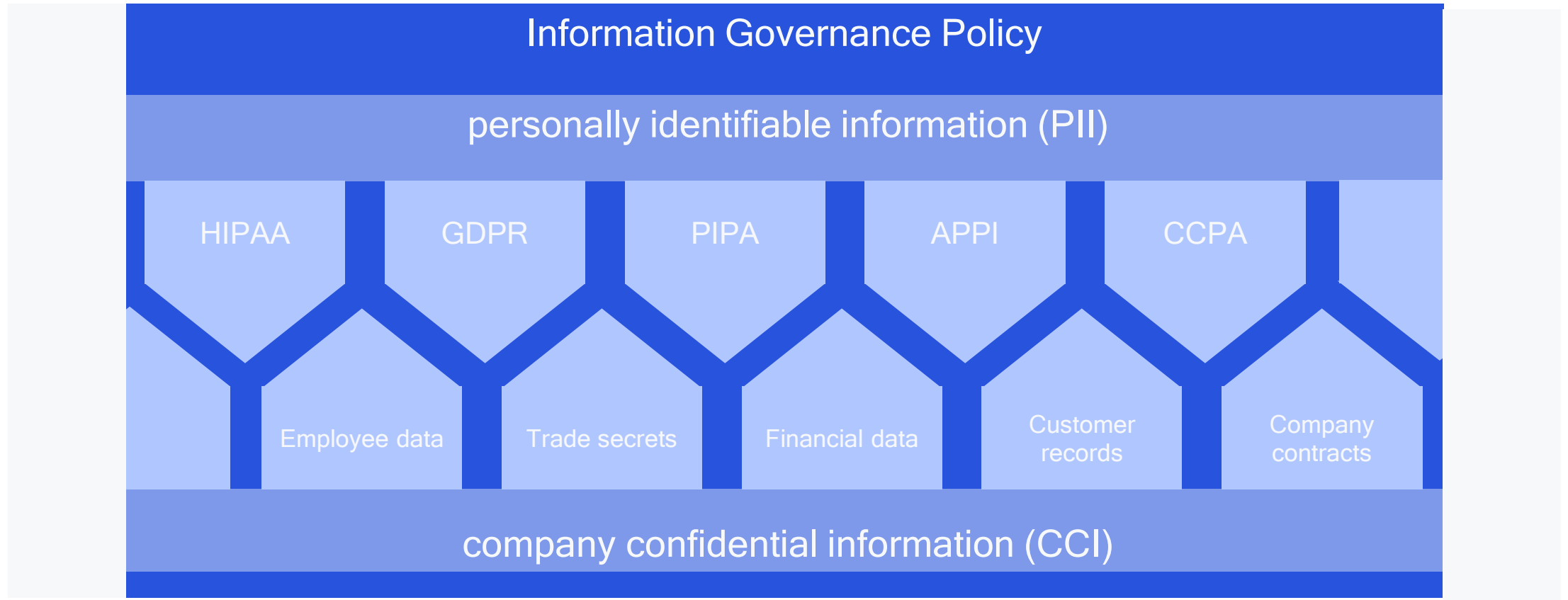
Poor font substitution

No watermark functionality

No PDF support

Downstream
use cases

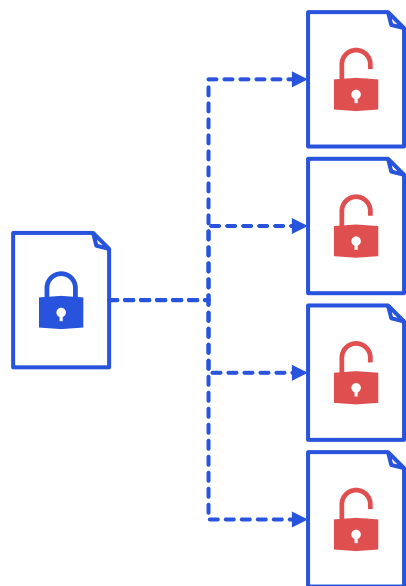
Information governance risks



Information governance risks

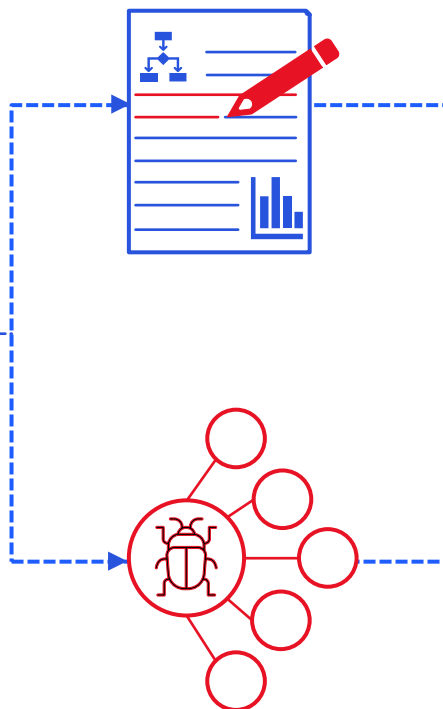
Sharing, downloading and opening documents increase risk of data leakage and malware spread

- Downloading creates digital duplicates



- Results in legal fines, loss of company trust and goodwill

- Local editing allows unauthorized changes



- Opening to edit can trigger and spread malware

- Distribution violates GDPR, HIPAA, CCPA, CCI, etc.



- Malware may infect networks, losing time, trust, and money

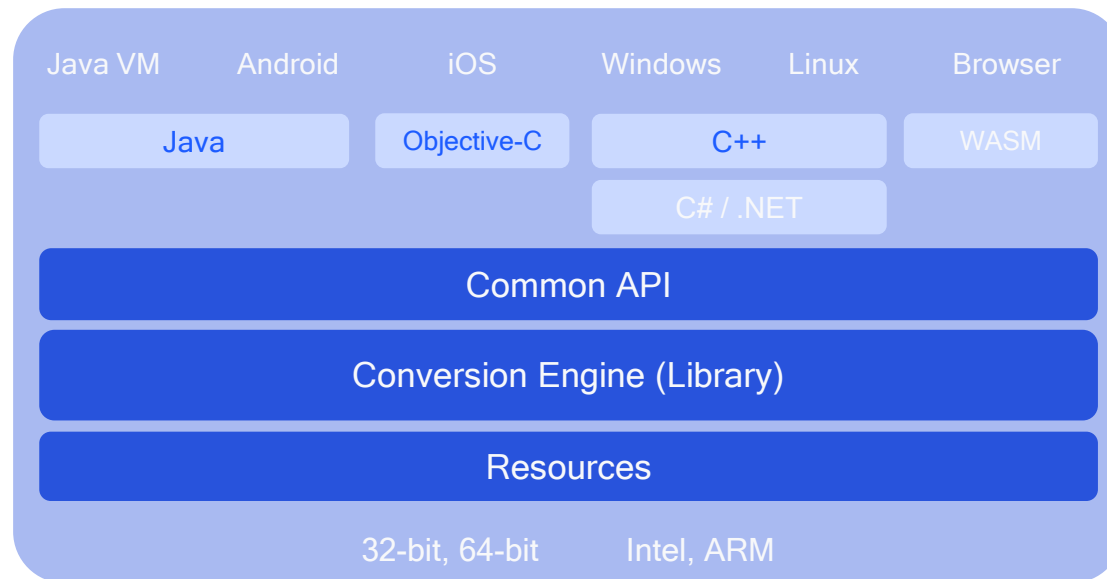
Productivity risks

Downloading and opening documents takes time and may not provide the same experience across platforms



DirectOffice platform support

Single development for multiple platforms



DirectOffice SDK components

- Library packaged for multiple platforms
 - Shared conversion library
 - Language-specific wrappers
- Common API across platforms
- Full documentation
- Sample applications

Development benefits

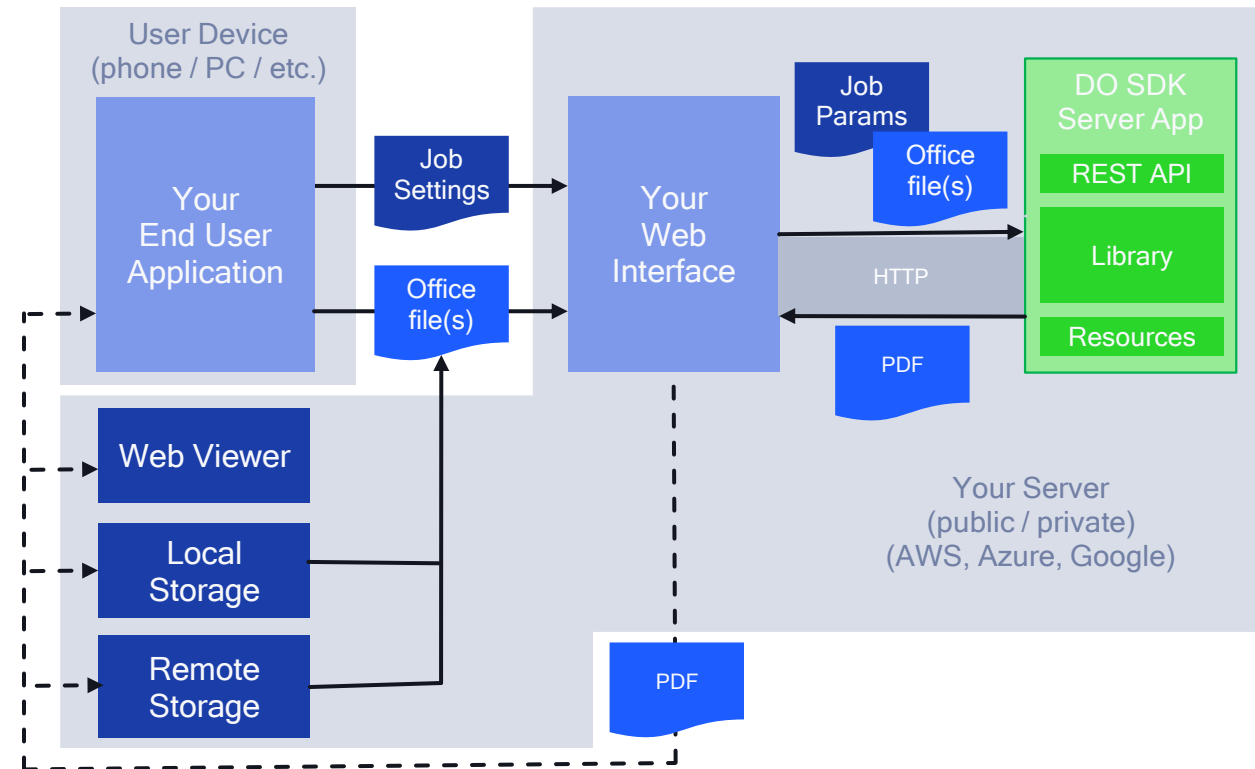
- Easy to integrate across platforms
- Fast time to market for multi-platform solutions

DirectOffice SDK for web services

Document flow in your solutions - DOSDK as a separate application

- HTTP
 - Standard HTTP GET / POST operations
 - Submit documents
 - Request JSON job parameters
 - Retrieve rendered output
- Server application
 - Receives and processes HTTP requests
 - Can be implemented in multiple programming languages
- Library
 - C sharable object
 - Converts / renders document

• Document flow

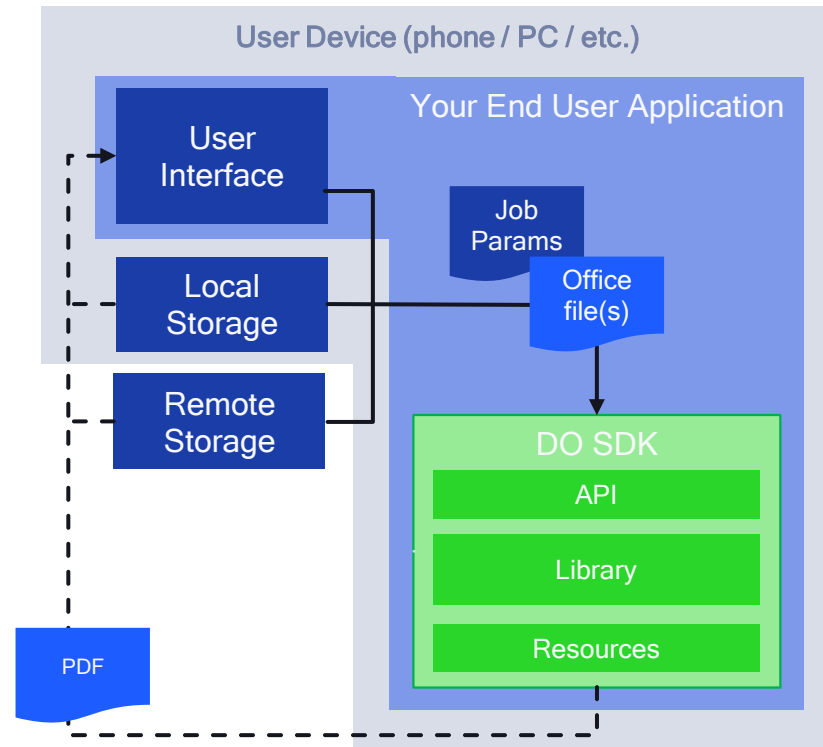


DirectOffice SDK for application integration

Document flow in your solutions - DOSDK integrated with your application

- API
 - Accepts Office files and job settings.
- Library
 - Java, Objective-C, C++, C#
 - Can be used as part of Android, iOS, Windows, Linux or Web-based applications
 - Converts / renders document

- Document flow



Summary

- TWAIN Direct provides a great framework for hardcopy DX workflows
- Microsoft Office files are a good candidate to join those workflows
- Technologies like DirectOffice SDK can be used upstream (conversion to PDF) or downstream (viewing or PDF for further processing)
- Opportunities for TWAIN Direct developers to expand the reach of their products by harmonizing hardcopy and Office file input

Questions?

Thank you



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