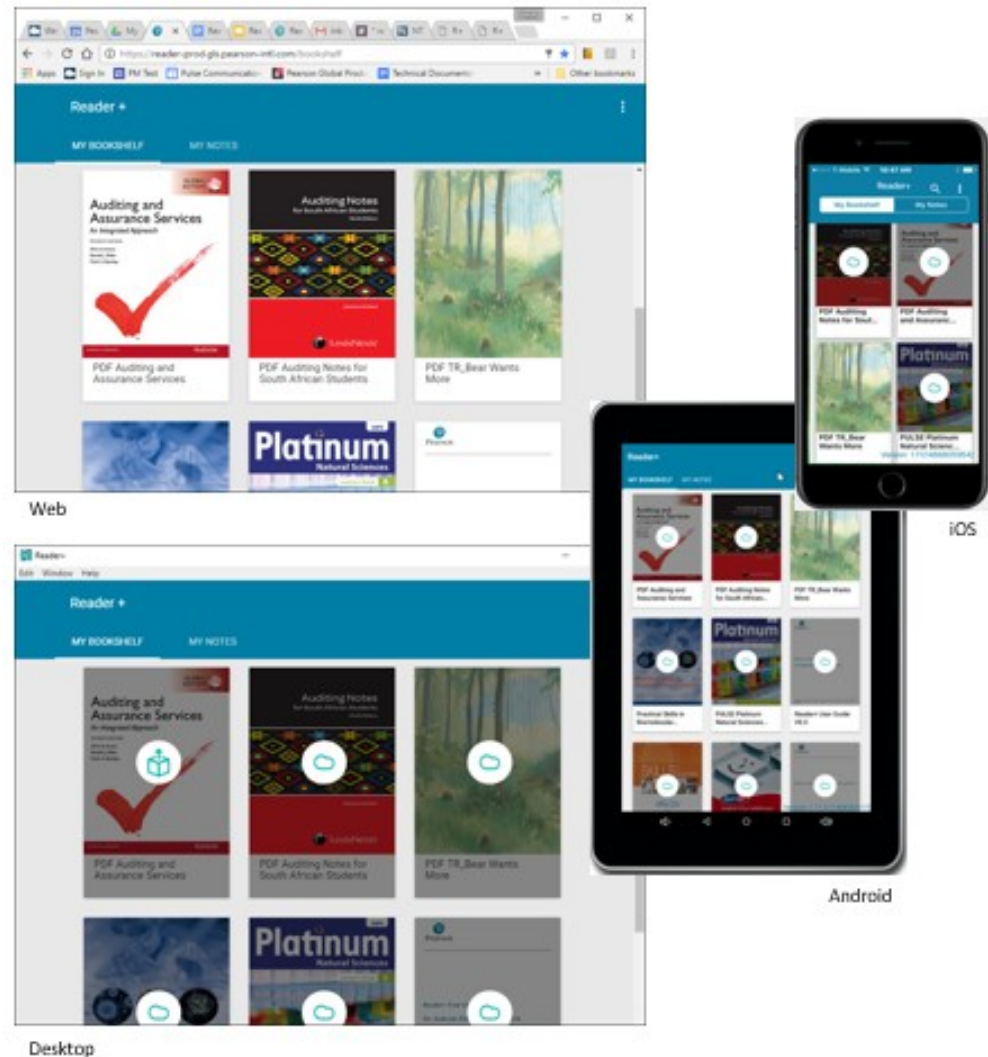# Reader+ Functional Architecture
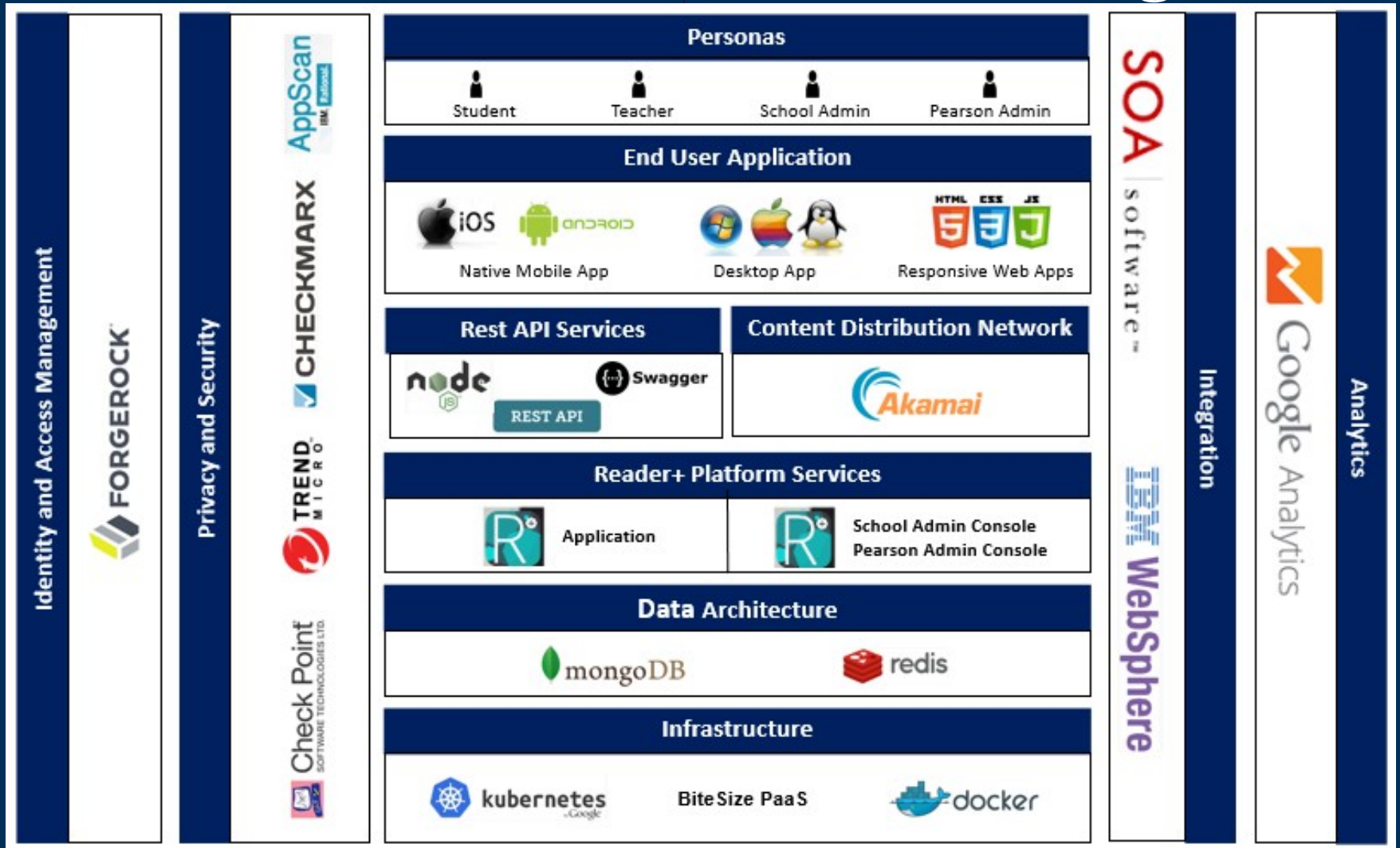
Reader+ Functional Architecture Overview

The functional architecture provides the foundation for defining the system architecture through the allocation of functions and sub-functions to hardware/software, databases, facilities and operations.

The interfaces between each of the functions and subfunctions are fully defined, as are the interfaces to the external world.

The needs of our stakeholders can then be traced to the specific physical components responsible for performing the specified requirements.

Web

Desktop

iOS

Android

Pearson

Reader+ Functional Architecture Diagram

Identity and Access Management — FORGEROCK

Privacy and Security — CHECKMARX, AppScan IBM, TREND MICRO, Check Point SOFTWARE TECHNOLOGIES LTD

Personas
- Student
- Teacher
- School Admin
- Pearson Admin

End User Application
- iOS / Android — Native Mobile App
- Desktop App
- HTML CSS JS — Responsive Web Apps

Rest API Services — node JS, Swagger, REST API

Content Distribution Network — Akamai

Reader+ Platform Services — Application; School Admin Console / Pearson Admin Console

Data Architecture — mongoDB, redis

Infrastructure — kubernetes Google, Bite Size PaaS, docker

Integration — SOA software, IBM WebSphere

Analytics — Google Analytics

Pearson

Identity and Access Management

Reader+ secures digital identities for:

- People

- Devices

- Connected entities online

It verifies who you are and what you can access.

FORGEROCK

Privacy and Security

Reader+ employs various forms of network security as foundational controls:

- Application security

- Intrusion detection systems

This provides for an in-depth defense against identified attacks while ensuring legitimate traffic reaches its intended destination.

TREND MICRO

AppScan
IBM. Rational.

Check Point
SOFTWARE TECHNOLOGIES LTD.

CHECKMARX

Personas

There are four roles that define the users of Reader+ systems, listed below:

- Students - attendees of one or more classes that are supported by Reader+ for a school

- Teachers - resources of Reader+ defined schools that are designated to teach and manage classes

- School Administrator - defines the Reader+ class profiles including the following:

  - Books and study materials

  - Teachers

  - Students

- Pearson Administrator - creates Reader+ schools, defining the following:

  - Schools and their locations

  - School Administrators

  - Books and study materials

Student

Teacher

School Administrator

Pearson Administrator

Pearson

End User Applications

Reader+ scales globally and synchronizes state and data across multiple devices even in critical geographic areas where bandwidth is limited.

Reader+ is currently available on Android, iOS, Web and Desktop (Windows, macOS, Linux).

Native Mobile Apps - iOS and Android

Reader+ is delivered to end users as a smartphone application that is coded in a several programming languages:

- Objective C for iOS
- Java for Android

Reader+ provides fast performance and a high degree of reliability.

continued…..

Native Mobile App

Desktop App

Responsive Web App

Pearson

End User Applications ....continued

Desktop Apps - Microsoft, Apple, Linux

Reader+ runs as a stand alone on a desktop or laptop computer.

This contrasts with a Web-based application, which requires a Web browser to run.

Responsive Web Apps

For the Web, Reader+ employs a design approach aimed at crafting a site that provides:

- An optimal viewing experience
- Easy reading and navigation
- A minimum of resizing, panning, and scrolling
- Support for a wide range of browsers

Native Mobile App

Desktop App

Responsive Web App

Pearson

Rest API Services

REST (REpresentational State Transfer) is an architectural style, and an approach to communications that is often used in the development of Web services.

The use of REST is often preferred over the more heavyweight SOAP (Simple Object Access Protocol) style because REST:

- Does not leverage as much bandwidth

- Provides a better fit for use over the Internet

Content Distribution Network

Reader+ employs a content distribution network (CDN) that is a globally distributed network of proxy servers deployed in multiple data centers.

The goal of the CDN is to serve content to end-users with high availability and high performance.

This service is effective in speeding the delivery of content of websites with high traffic and websites that have global reach.
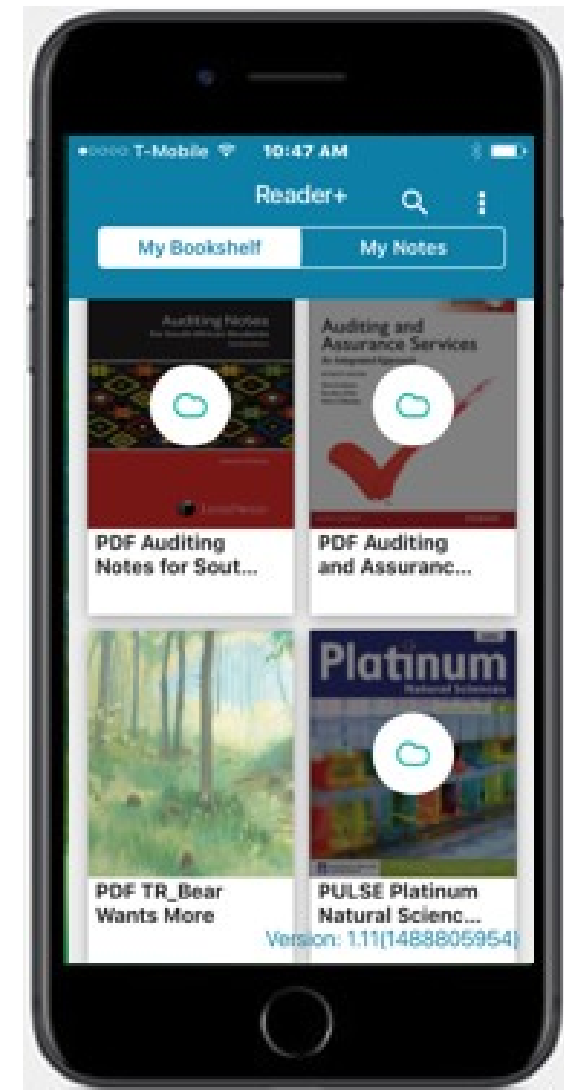
Platform Services - Reader+ Application

Reader+ is an eBook reader application that enhances the student learning experience.

In addition to one-stop access via the Bookshelf for eBooks and study materials, students can read and interact with their digital content using:

- Rich multimedia playback (audio and video)

- Comments added by course instructor

- Indexed access to critical study support tools:

- Highlighting

- Note taking, both text and recorded voice notes

- Bookmarks

- Search - full text/notes/highlights/player (audio notes)

Platform Services - Administrative Portals

The Reader+ Administration Portals are used to manage schools that employ the Reader+ Application to make books and study resources available to users, both online and offline.
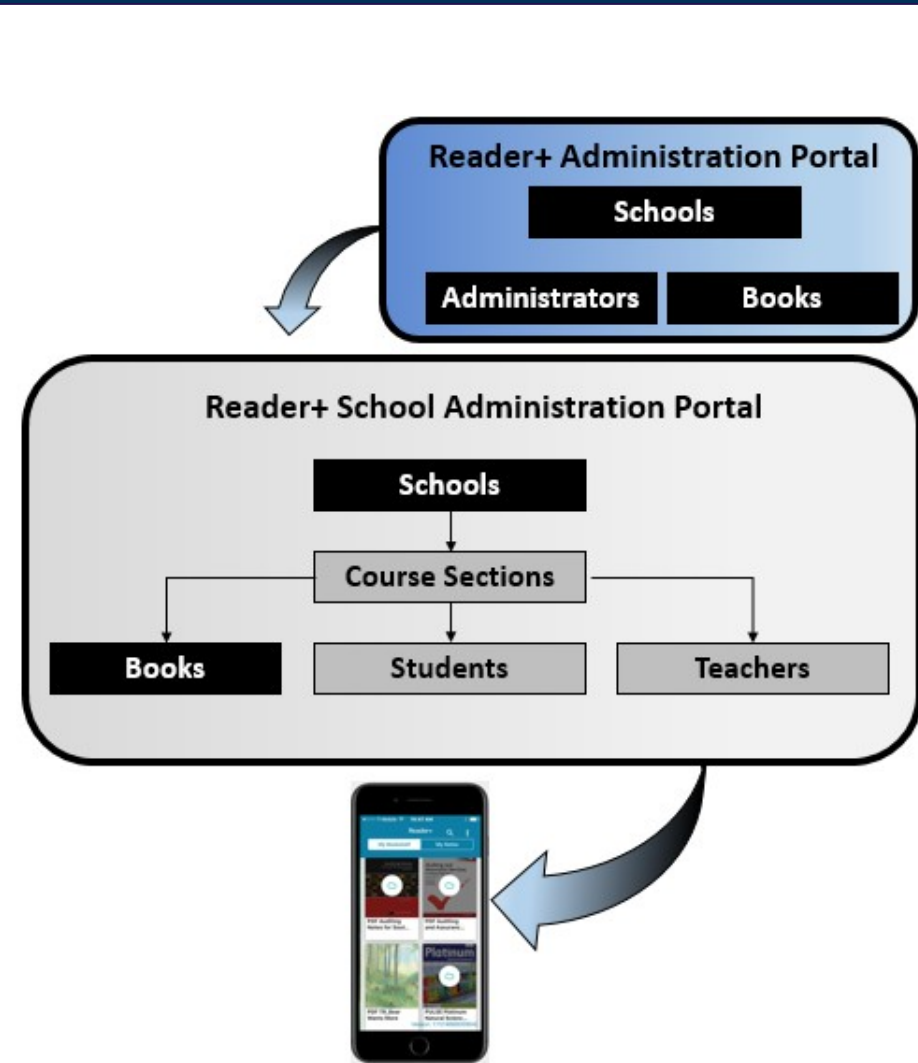
Reader+ Administration Portal

The Pearson Administrator, using the Reader+ Administration Portal:

- Defines Schools and School Administrators
- Allocates study resources (books and other study materials designated for Schools)

Reader+ School Administration Portal

Using the Reader+ School Administration Portal, school administrators:

- Define Course Sections
- Allocate study resources to Course Sections
- Assign Students and Teachers to Course Sections.

Pearson

Data Architecture

Reader+ Application

The content sources for Reader+ originate from Pearson and from various third parties. Content types are as follows:

- ePub (2.0)
- ePub3
- pdf,
- pxe
- mp3
- mp4
- interactives - (html files)

Reader+ Administrative Portals

Master Data for the Administrative portals breaks out as follows:

- Students
- Teachers
- School Administrators
- Schools and School Organizations
- Student Study Resources

Infrastructure

The Reader+ Infrastructure provides a platform for automating deployment, scaling, and operations of application containers across clusters of hosts.

The application containers are packaged with all of the parts it needs, such as libraries and other dependencies, and ship it all out as one package. Included are:

- On demand self service (API)

- Automated Deployments

- Service Discovery

- DNS as service

- Backup as service

Integration

Reader+ incorporates software products used to create applications and integrate applications with other applications.

This approach is used to create an architecture based upon the use of services to carry out a function, such as:

- Producing data

- Validating a customer
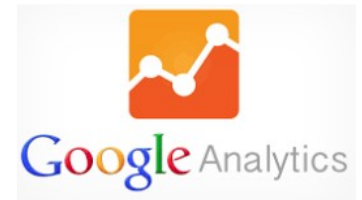
- Providing simple analytical services
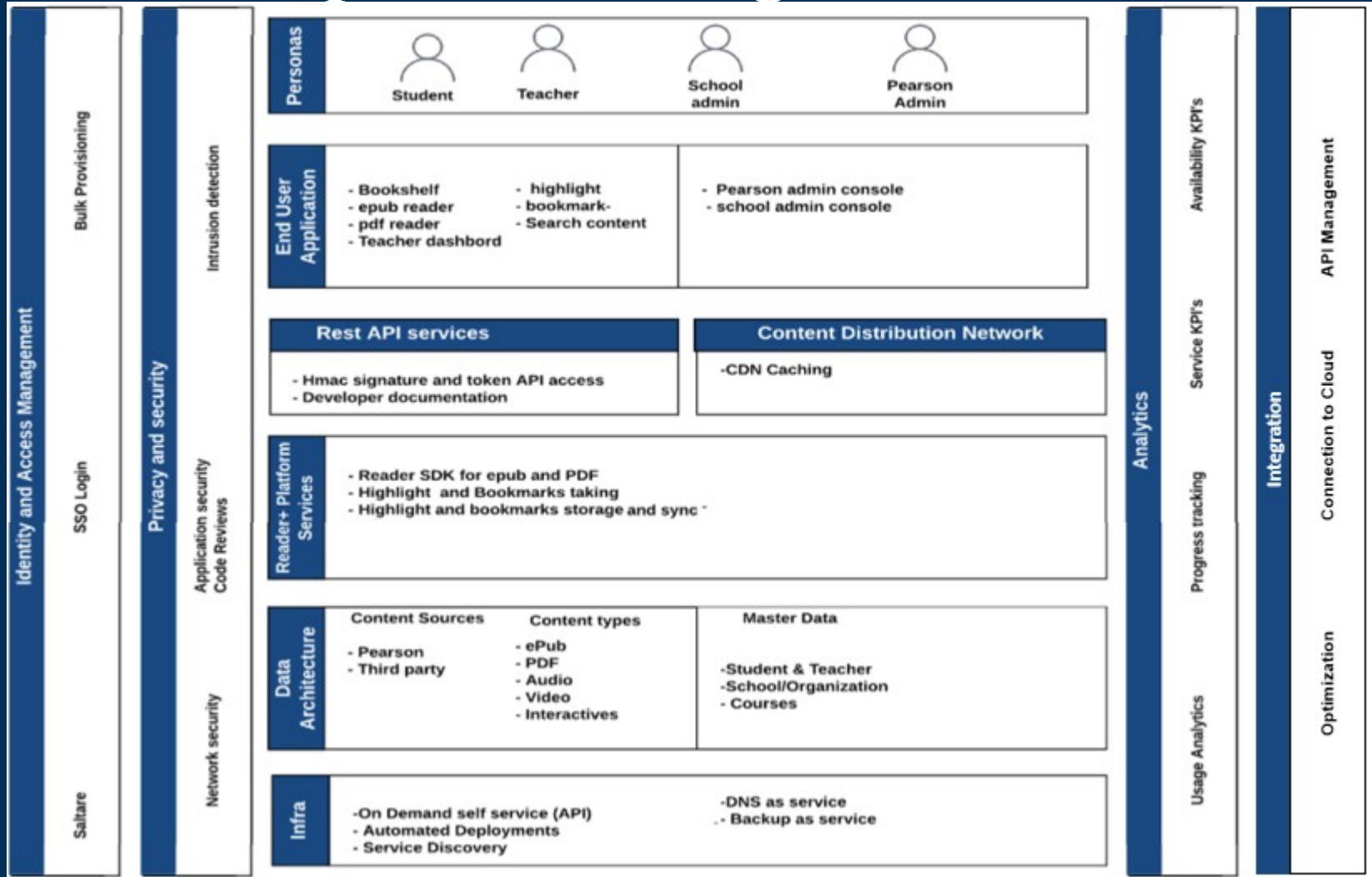
SOA software™

IBM WebSphere

Analytics

In addition to tracking and reporting website traffic, Reader+ Analytics implements a portfolio focused on:

- Information lifecycle management

- Data exchange

- Cloud data integration

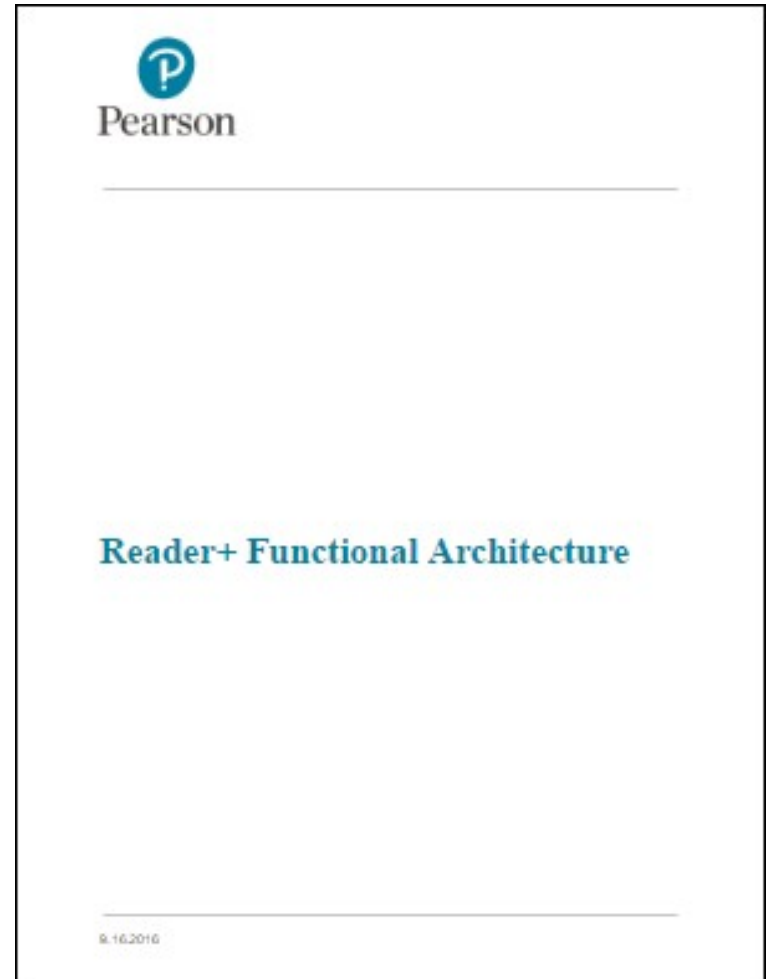- Event processing

- Master data management

Google Analytics

Reader+ Capabilities Diagram

Reader+ Functional Architecture

A technical review document is available.

The document details the functional architecture described in this slide deck.

Pearson

ALWAYS LEARNING