Product Architecture
IBM Case Manager

IBM ECM Worldwide Business Partner Technical Enablement (*)

Agenda

- Case Management Introduction
- Components
- High Level Architecture
- Development Environment
    - Solution Object Model
    - Case Tasks
    - Solution Definition Artifacts
    - Project Areas
    - Design Object Store
- Execution Environment
    - Case Instance
    - Case and task Lifecycles
    - Case Split
    - Deployment Topology
    - Target Object Store
    - P8 Task Implementation
    - External Data Support
- Case Analytics
- CM8 Integration
- IBM BPM integration

IBM Case Manager
Brings people, process and information together … in context of a case

process

people

Case Management

information

- Delivers **optimized case outcomes**

- Supports **dynamic**, runtime work management

- Delivers **trusted information** to the case – structured or unstructured

- Manages and governs **entire case lifecycle**

- Provides the line-of-business and IT with tools to **rapidly deliver** case-based solutions

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IBM's layered approach to case management

Use Cases

- Complex exception handling
- Complaint or dispute management
- New customer or new account opening
- Lending applications
- Credit approval
- Contract management
- Claims processing
- Benefits enrollment
- Rate case management
- Investigations or audits

KEY: Both *horizontal* and *vertical* in nature

Patterns

- Work activities are event-driven
- Collaborative, ad-hoc processes
- Processes are often not predetermined
- Work is knowledge intensive
- Content is essential for decision making
- Outcomes are goal-oriented
- Relies on people to make decisions

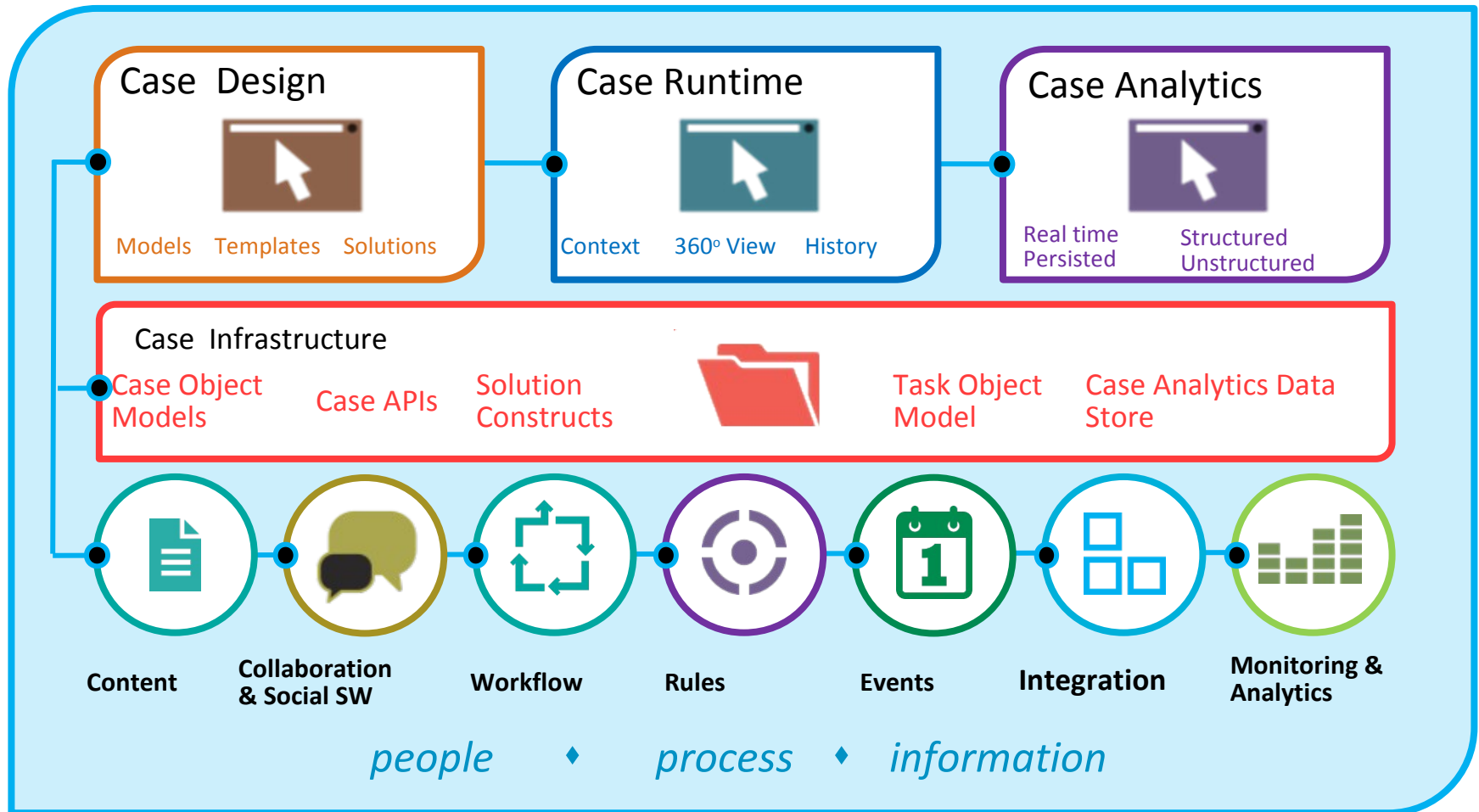KEY: A *case* is the primary focus of the system

Integrated Solution

- Content management
- Business process management
- Collaboration tools
- Social software
- Business rules
- Analytics
- Solution development and deployment
- Templates

KEY: Solution is optimized for the *context* of a case

IBM Case Manager Component Overview

…. supporting the entire case lifecycle

Case Design

Models   Templates   Solutions

Case Runtime

Context   360º View   History

Case Analytics

Real time
Persisted

Structured
Unstructured

Case Infrastructure

Case Object
Models

Case APIs

Solution
Constructs

Task Object
Model

Case Analytics Data
Store

Content

**Collaboration
& Social SW**

Workflow

Rules

Events

Integration

**Monitoring &
Analytics**

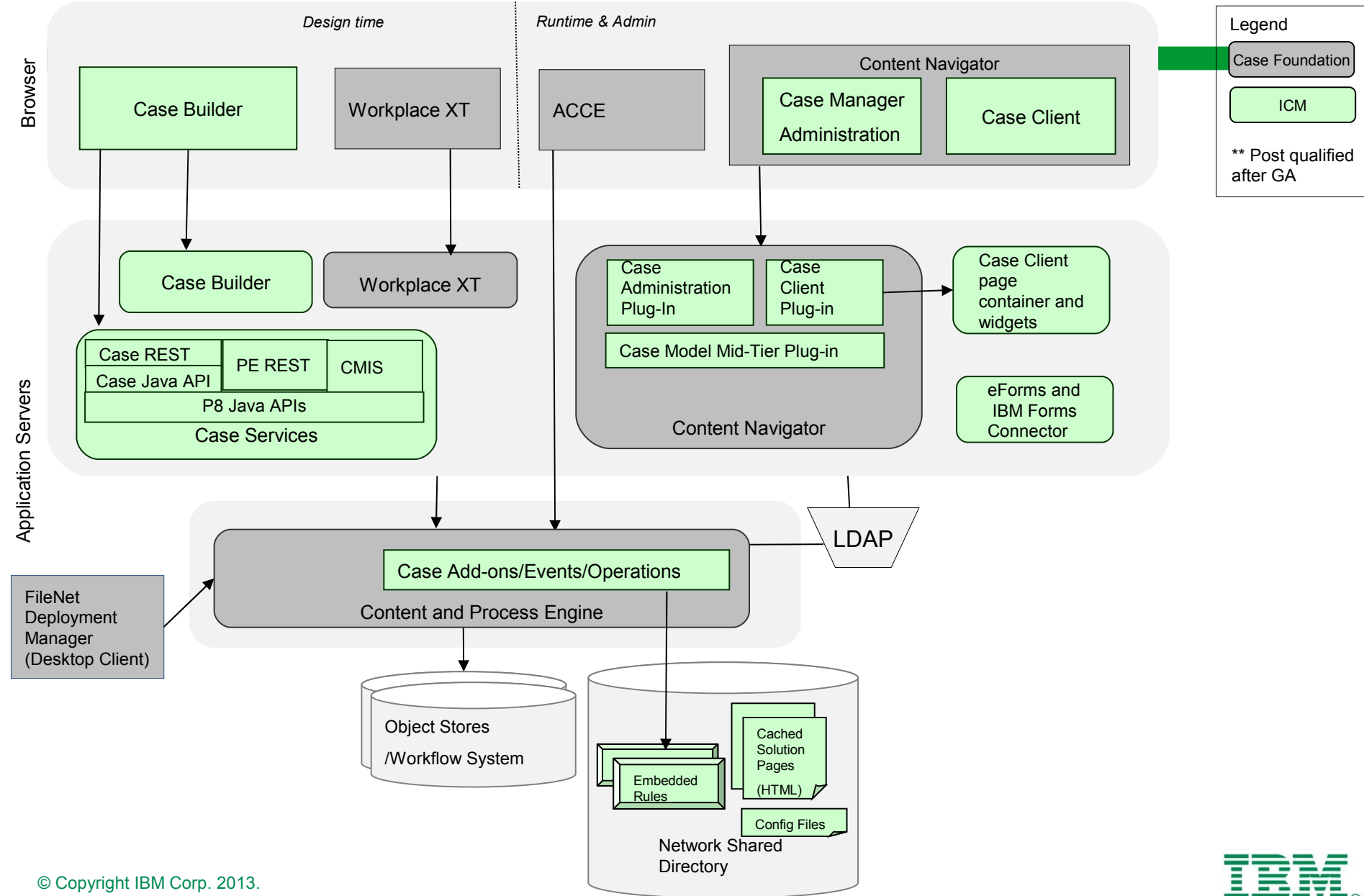*people*   ◆   *process*   ◆   *information*

Major components of the case manager environment

- **Case Manager Builder**

  – Case Solution builder tool oriented to needs of line of business analysts

- **Case Manager Client**

  – A run time environment for launching, processing, and interacting with cases

- **Case Manager Analytics**

  – Real time case monitoring with threshold monitoring and alert generation

- **Case Manager Administration Client**

  – Tool for configuring the Case Manager environment and for moving solutions between development and production domains

- **Case Manager API**

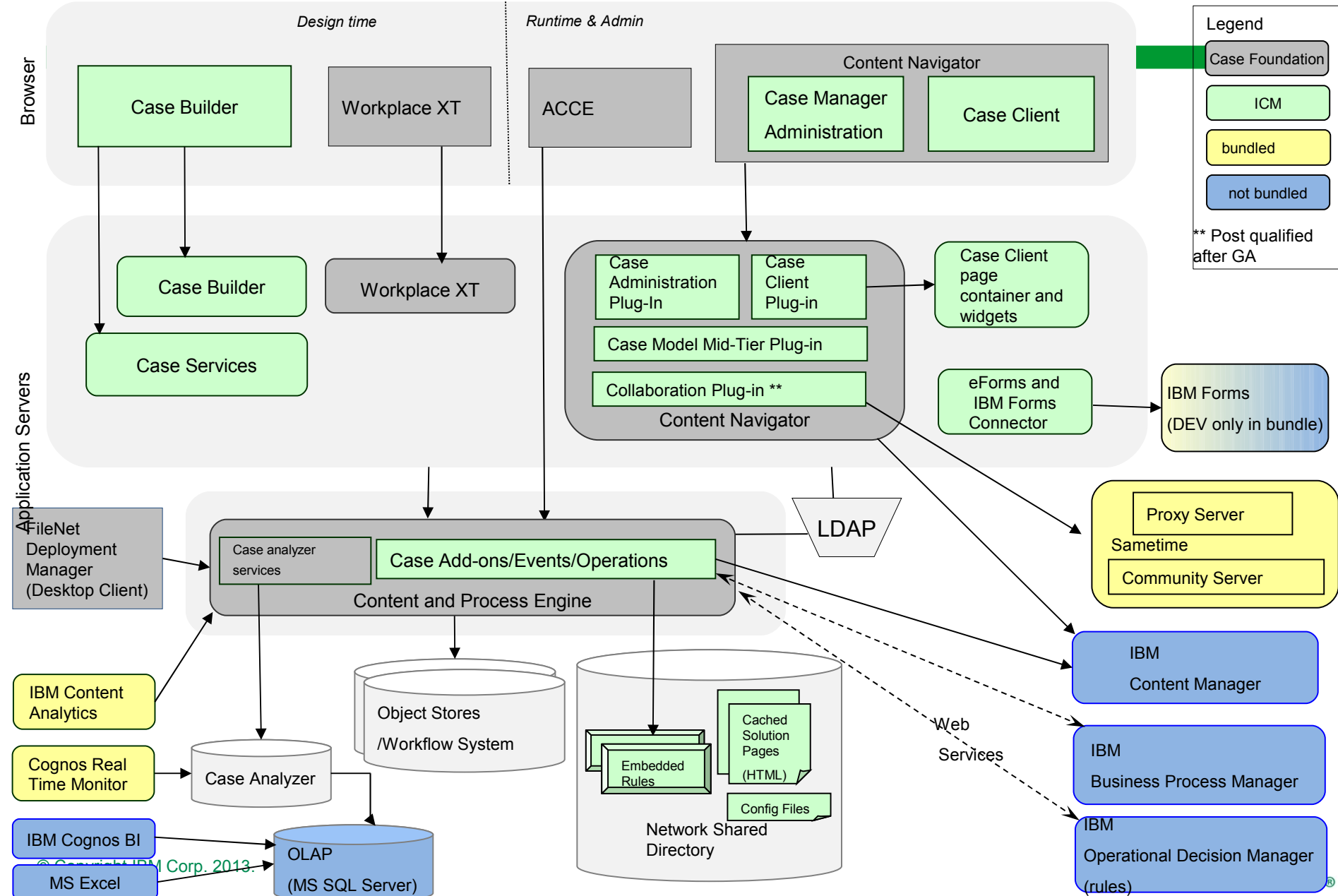 – Communication layer between components of the Case Manager applications.

Bottom line:

IBM Case Manager provides rich, web-based user interfaces for Case Solution Authors, Case Workers, and Business Owners
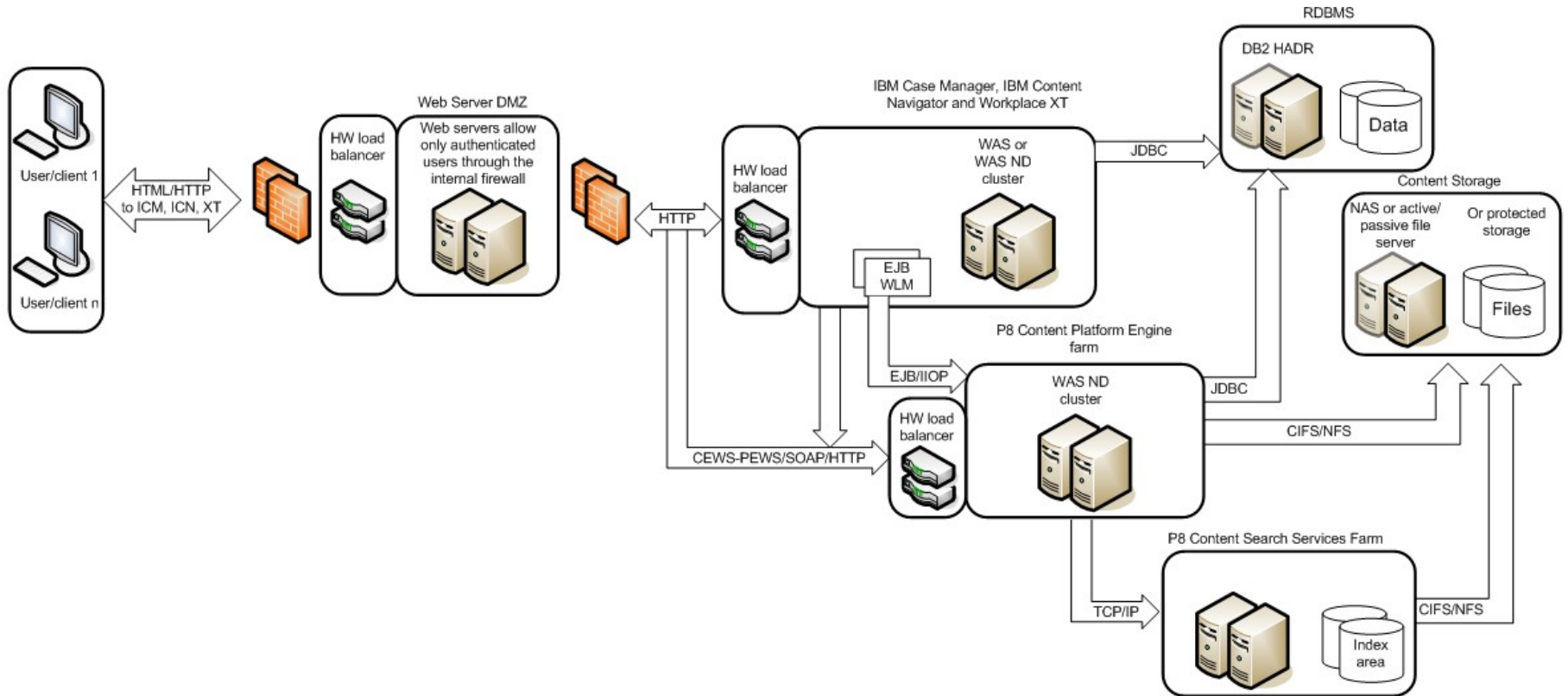
Case Manager 5.2 Architecture with core components

Browser

Design time | *Runtime & Admin*

Case Builder

Workplace XT

ACCE

Content Navigator
- Case Manager Administration
- Case Client

Legend
- Case Foundation
- ICM

** Post qualified after GA

Application Servers

Case Builder

Workplace XT

Case Services
- Case REST
- Case Java API
- PE REST
- CMIS
- P8 Java APIs

Content Navigator
- Case Administration Plug-In
- Case Client Plug-in
- Case Model Mid-Tier Plug-in

Case Client page container and widgets

eForms and IBM Forms Connector

LDAP

FileNet Deployment Manager (Desktop Client)

Case Add-ons/Events/Operations

Content and Process Engine

Object Stores /Workflow System

Network Shared Directory
- Embedded Rules
- Cached Solution Pages (HTML)
- Config Files

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Case Manager 5.2 Architecture with integrated components

Browser

Design time | Runtime & Admin

Case Builder

Workplace XT

ACCE

Content Navigator

Case Manager Administration

Case Client

Legend

Case Foundation

ICM

bundled

not bundled

** Post qualified after GA

Application Servers

Case Builder

Workplace XT

Case Services

Case Administration Plug-In

Case Client Plug-in

Case Client page container and widgets

Case Model Mid-Tier Plug-in

Collaboration Plug-in **

Content Navigator

eForms and IBM Forms Connector

IBM Forms (DEV only in bundle)

LDAP

FileNet Deployment Manager (Desktop Client)

Case analyzer services

Case Add-ons/Events/Operations

Content and Process Engine

Proxy Server

Sametime

Community Server

IBM Content Analytics

IBM Content Manager

Cognos Real Time Monitor

Case Analyzer

Object Stores /Workflow System

Cached Solution Pages (HTML)

Web Services

IBM Business Process Manager

Embedded Rules

Config Files

IBM Cognos BI

MS Excel

OLAP (MS SQL Server)

Network Shared Directory

IBM Operational Decision Manager (rules)

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Example of High Availability Deployment

Rapid solution design
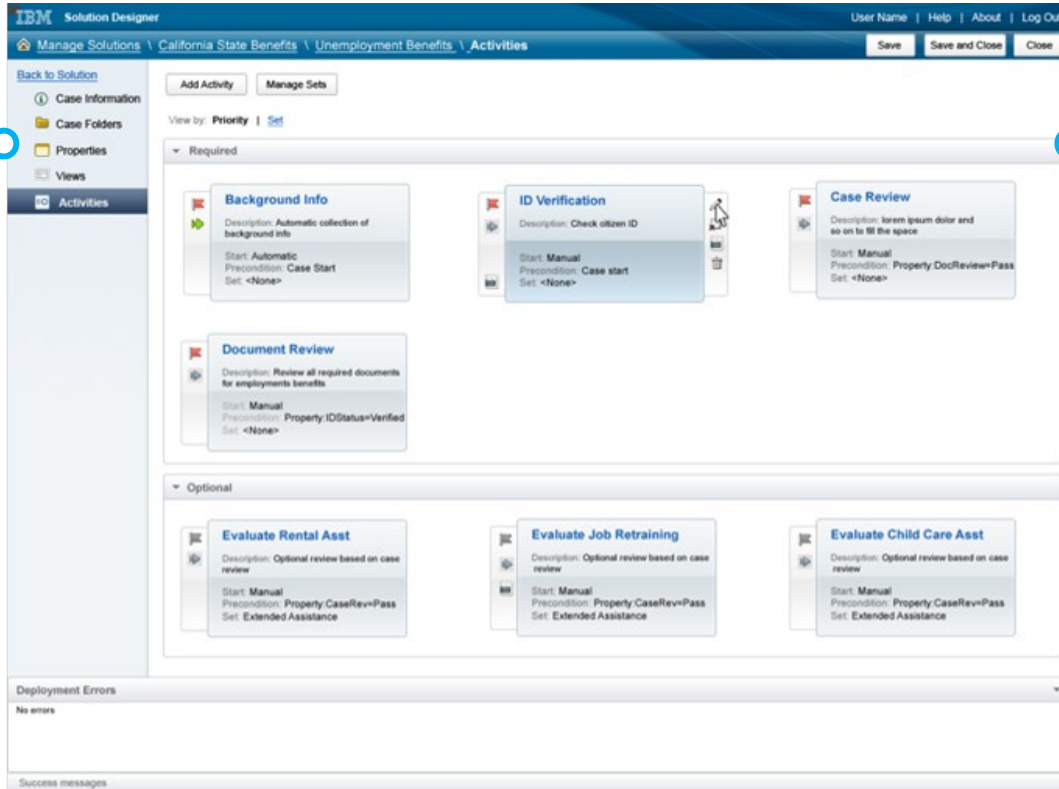
Case Design

Models   Templates   Solutions

- **Easy to use, "Interview Mode" (wizard-driven)**
  Case designer allows a business user to very quickly build a solution

- **Comprehensive across case assets**
  Case designer can provide 360^0 view of case

- **Leverage templates for a fast start**
 *Represent industry best practices*

Significantly shortens time-to-value for case-style applications

Bottom line:
Deliver end users the solution in a fraction of time of other approaches

Page layouts in Case Builder

- Page layout designer integrated directly in Case Builder
  - Replaces Business Space
- Default pages generated for each solution
  - Modify and add new pages
  - Configure page layout
  - Edit widget settings to customize
  - All toolbars and menus are configurable
- Widgets similar to ICM 5.1.1 iWidgets
  - Register your own custom widgets and toolbar/menu actions
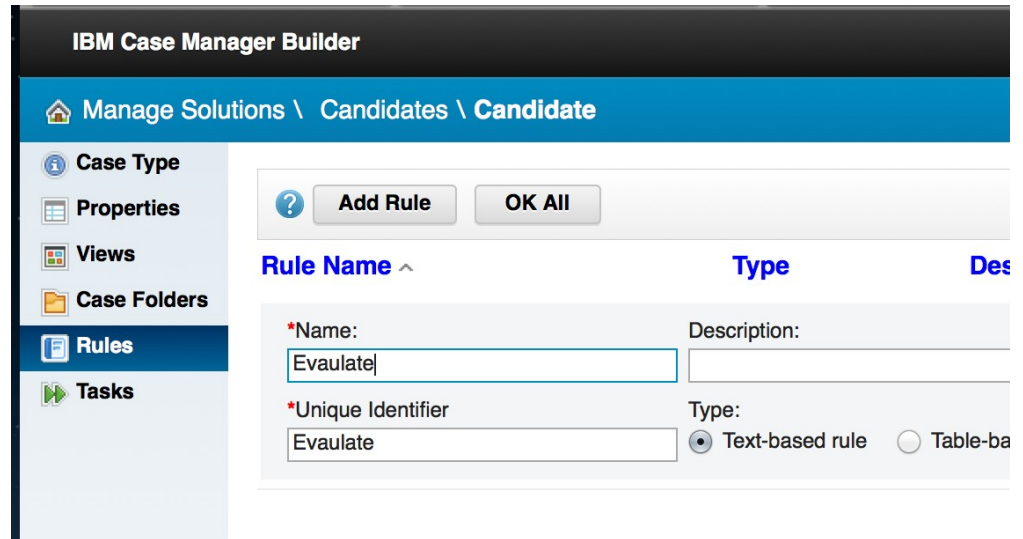 - Wire widgets together, and script using Java Script Adaptor

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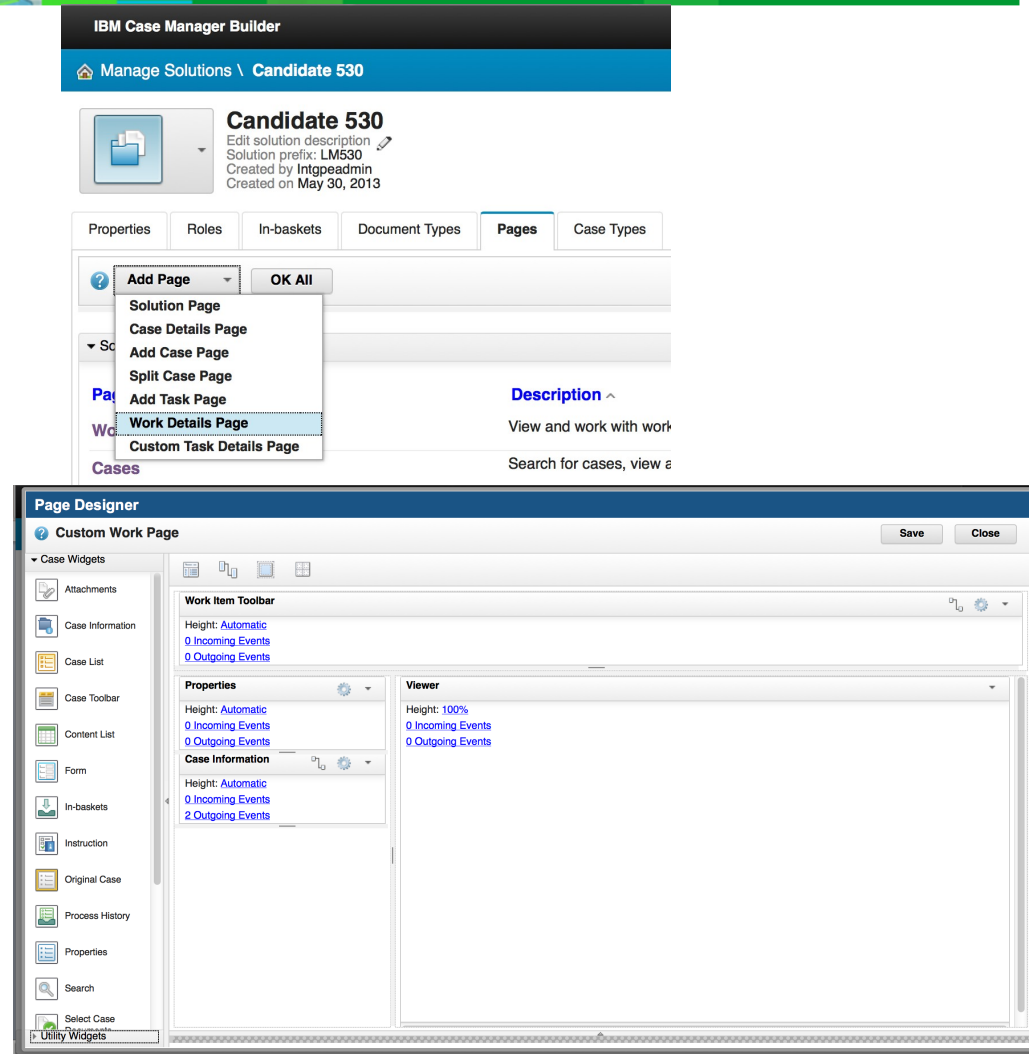
Property layouts in Case Builder

- Configure how case properties are displayed to users

- Multiple 'views' enable different property layouts for different pages

- Settings enable fine-grained control

- Continued support for electronic forms designers (eForms, IBM Forms)
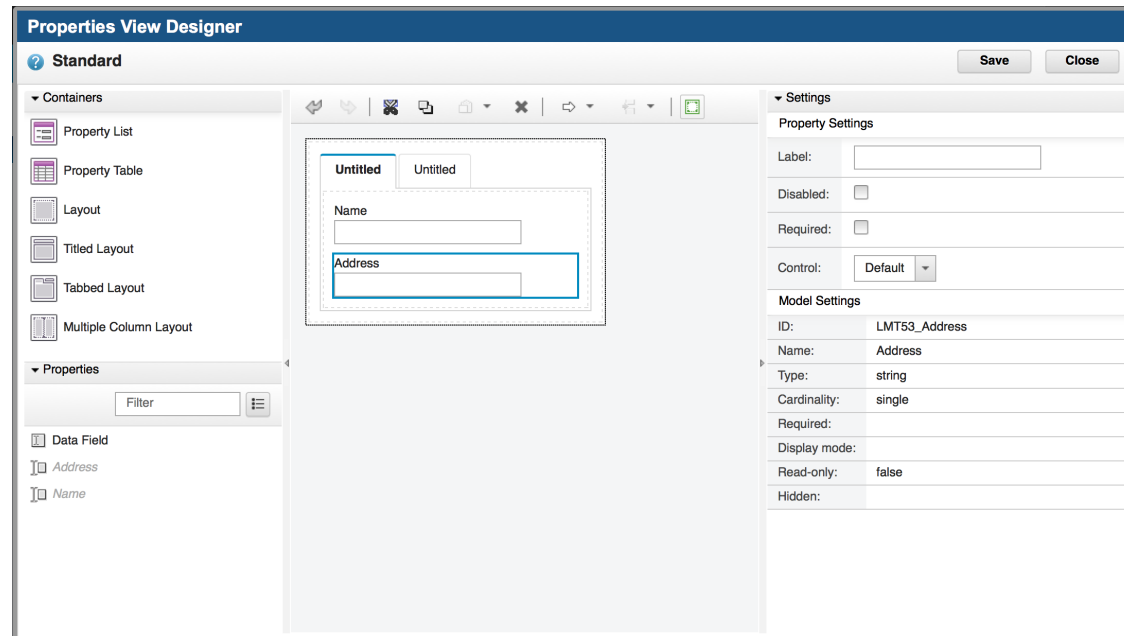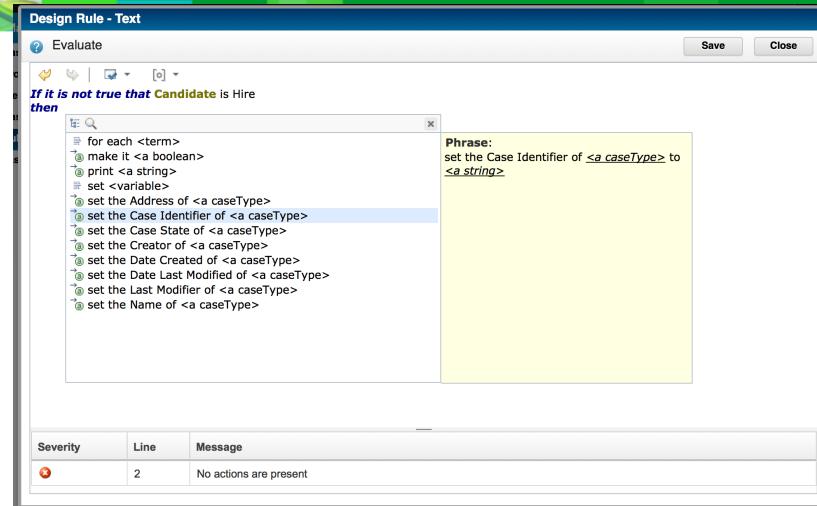
Rules integrated in Case Builder

- Define rules directly in Case Builder
    - Makes it easier for the Business Analyst to author rules without the need for learning and using separate tools
- Separate installation and administration of the ILOG platform is no longer required for basic rules
- Ability to export rules to fully featured IBM Operational Decision Manager (ODM)

IBM Case Manager Builder

Manage Solutions \ Candidates \ **Candidate**

- Case Type
- Properties
- Views
- Case Folders
- **Rules**
- Tasks

Add Rule   **OK All**

Rule Name ^   **Type**   **Des**

*Name: Description:

Evaulate

*Unique Identifier   Type:

Evaulate   ● Text-based rule   ○ Table-ba

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Rules integrated in Case Builder

- Two types of rules
  - Text-based, natural language rules
  - Decision table
- Access/update case properties from your rules rules
- Execute a rule as a step in a task (uses a component step)
- Supports defining external variables that are not specific to a case instance
  - E.g. Interest Rate
  - You provide the external value from the task process

Design Rule - Text

Evaluate   Save   Close

If it is not true that **Candidate** *is Hire*
then

for each <term>
make it <a boolean>
print <a string>
set <variable>
set the Address of <a caseType>
set the Case Identifier of <a caseType>
set the Case State of <a caseType>
set the Creator of <a caseType>
set the Date Created of <a caseType>
set the Date Last Modified of <a caseType>
set the Last Modifier of <a caseType>
set the Name of <a caseType>

Phrase:
set the Case Identifier of *<a caseType>* to *<a string>*

Severity	Line	Message
❌	2	No actions are present

Design Rule - Table

Evaluate

	A	B	C	D
1		**Define Column...**		-
2		☑ Check Gap		-
3		☑ Check Overlap		-
4		Cut		-
5		Copy		-
6		Paste		-
		Insert Column ▸		
7		Delete		-
8		Clear		-

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Collaborative solution design

- Developer efficiency improved because multiple users can edit a solution in Case Builder at the same time

- Changes are saved as drafts until you are ready to commit and deploy changes

Lock Information

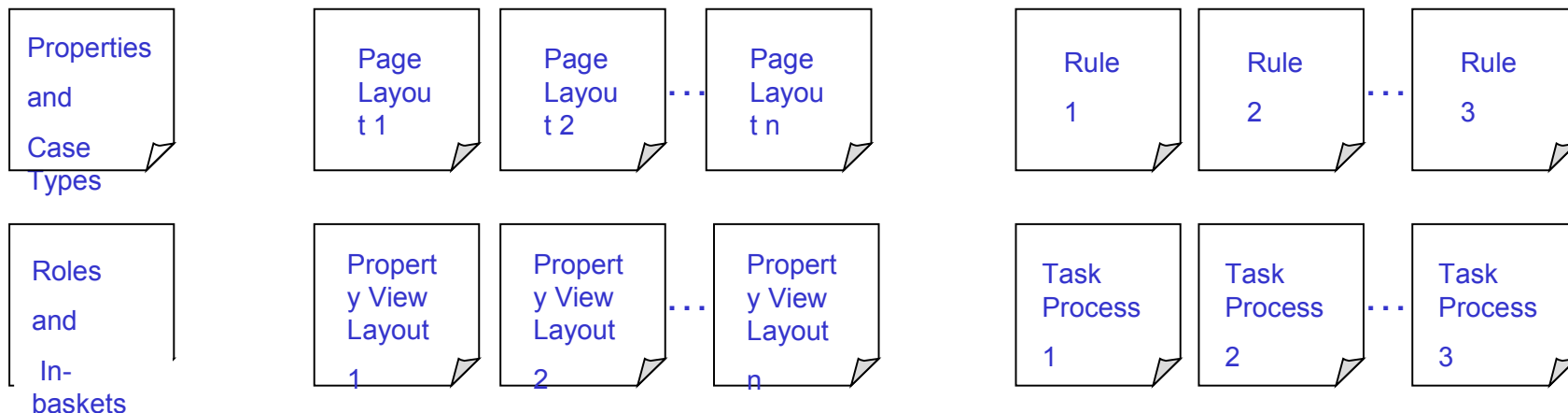**The following items are locked for editing:**

My locked items:

Type	Name
Candidates\View	Standard
Page	Case Details

Items locked by other users:

Type	Name	User
None		

Close

Properties and Case Types	Page Layout 1	Page Layout 2	· · ·	Page Layout n		Rule 1	Rule 2	· · ·	Rule 3
Roles and In-baskets	Property View Layout 1	Property View Layout 2	· · ·	Property View Layout n		Task Process 1	Task Process 2	· · ·	Task Process 3

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Object Model of ACM Solution Elements

- A solution type is conceptually composed of case types and other elements
- Persistence model is based on the case instance, all solution elements are deployed as P8 objects
- Most solution elements bear 1:n cardinalities with the solution type.
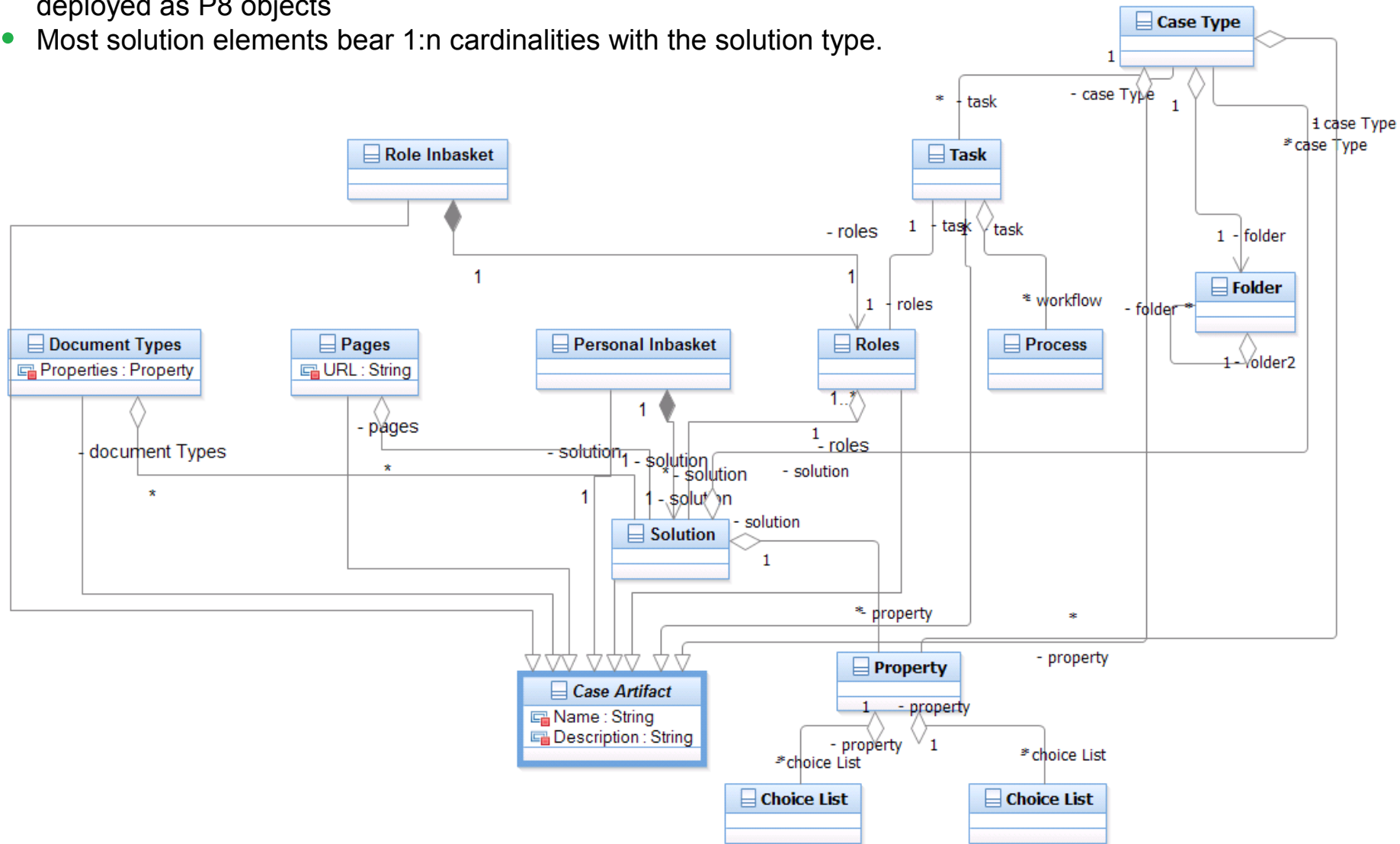
Tasks in ICM 5.1

Avoid defining a complete process, by just defining the known process fragments

Finding the right balance between formal and ah hoc processes

Explicitly model the "**what**" needs to be done, and the "**why**" it needs to be done.

Processes are only good to describe the "**how**" it need to be done

Typed

Tasks are deployed as PE processes

Repeatability

Tasks can be repeated at will

Grouping

Inclusive and Exclusive

Optional

User directed launching or skipping

Ad hoc

User dealing with unknown

Event driven

Tasks launched via events

Examples of tasks

Required

Background Info
Description: Automatic collection of background info

Start: Automatic
Precondition: Case Start
Set: <None>

ID Verification
Description: Check citizen ID

Start: Manual
Precondition: Case start
Set: <None>

Case Review
Description: lorem ipsum dolor and so on to fill the space

Start: Manual
Precondition: Property:DocReview=Pass
Set: <None>

Document Review
Description: Review all required documents for employments benefits

Start: Manual
Precondition: Property:IDStatus=Verified
Set: <None>

Optional

Evaluate Rental Asst
Description: Optional review based on case review

Start: Manual
Precondition: Property:CaseRev=Pass
Set: Extended Assistance

Evaluate Job Retraining
Description: Optional review based on case review

Start: Manual
Precondition: Property:CaseRev=Pass
Set: Extended Assistance

Evaluate Child Care Asst
Description: Optional review based on case review

Start: Manual
Precondition: Property:CaseRev=Pass
Set: Extended Assistance

Solution definition artifacts

- Each solution is a subfolder that contains:

  - **Solution Definition File (SDF)**

    - XML based file

    - Contains solution definition for; case types, document types, folder structure, properties, choice lists, Tasks, page references, views, etc

    - SDF does not contain target information

  - **Workflow Configuration file**

    - Contains definitions for role(s), inbasket(s), etc

  - **<Case Type name> XPDL (XML Process Definition Language files)**

    - One XPDL file for each case type

      - Each Task has one process definition

  - **Solution Workflow Collection (XPDL)**

    - Containing reusable P8 BPM processes

  - **User Interface page definitions**

Example of solution artifacts

Four types of Tasks:
- Created by Case Builder's Step Editor
- Reuse a workflow created by P8 BPM
- Invoke a WID created component
- Invoke an IBM BPM process

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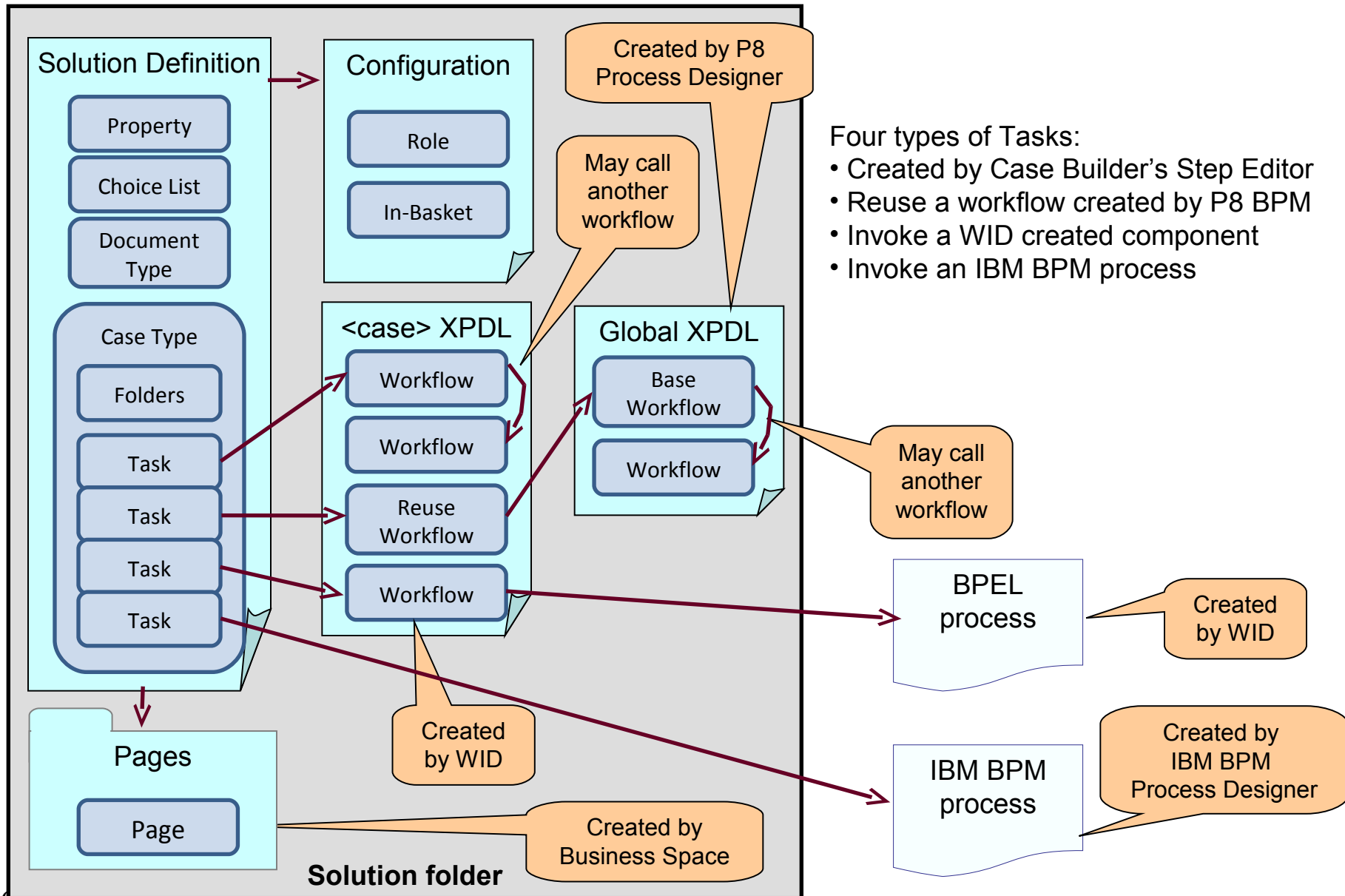
Project areas

- Development environment can be segmented into project areas each one containing a target object store as a sandbox
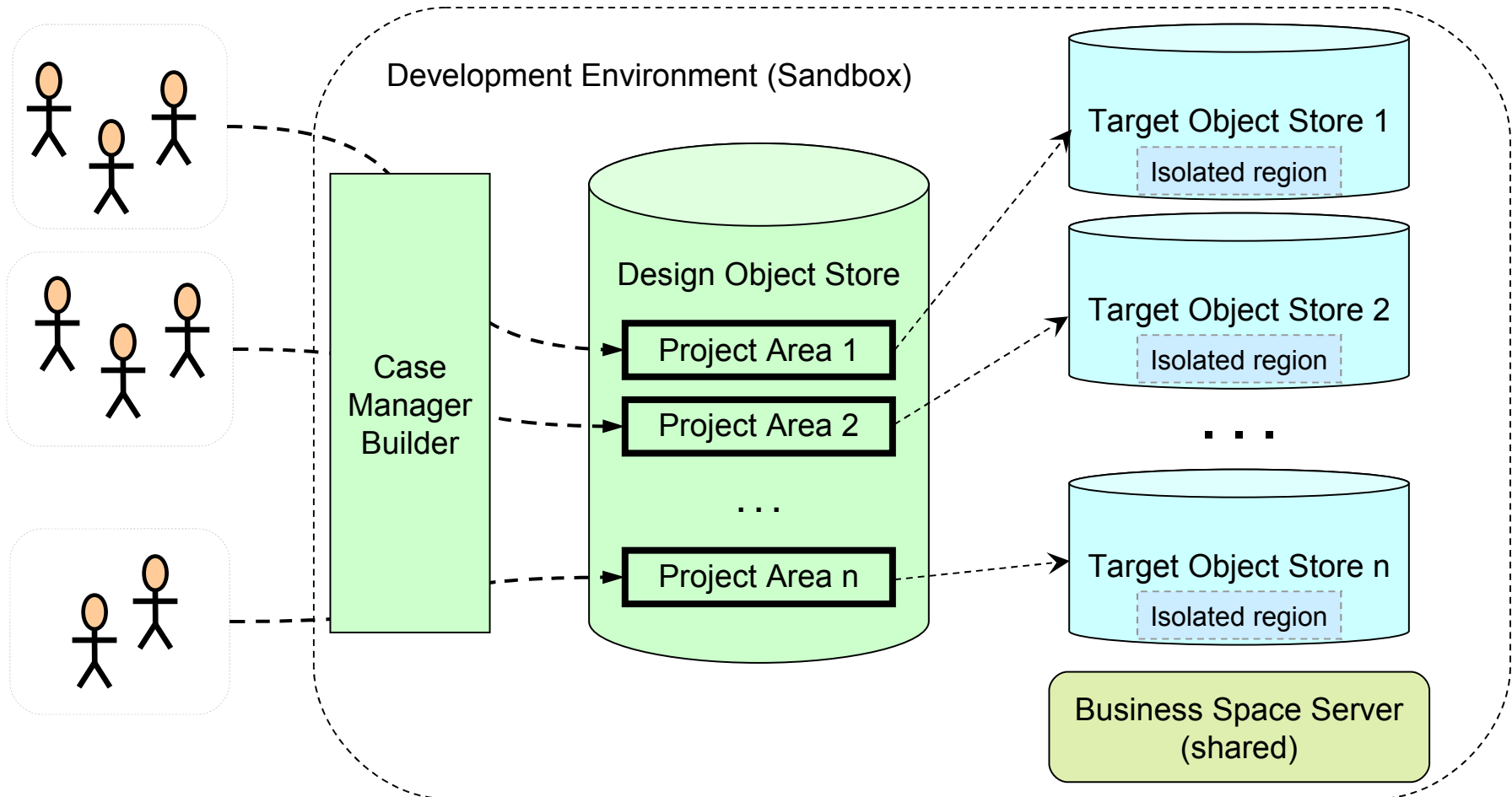
Case worker user experience

Case Runtime

Context   360º View   Activities

- **Role-based and personalized**
  End user gets exactly the information they need to progress the case

- **Flexible and extensible**
  Can be configured to meet unique business requirements

- **Provides deep context for case work**
  No more disjointed jumping between application

- ***Brings people, process and information together to drive case progression and better outcomes***

Bottom line:
A case worker has all the information they need to improve case outcomes

Case visualizer and history

- Highly visual, easy to use, case timeline that gives case workers a one stop overview of what's happening in the lifecycle of a case

- Provides more visibility into state of tasks and the work items behind them

- (Preview) Includes a new history snapshot feature that allows you to inspect the state of a case at any moment in time and easily discover changes that were made

- Data culled from CE audit event and PE event logs
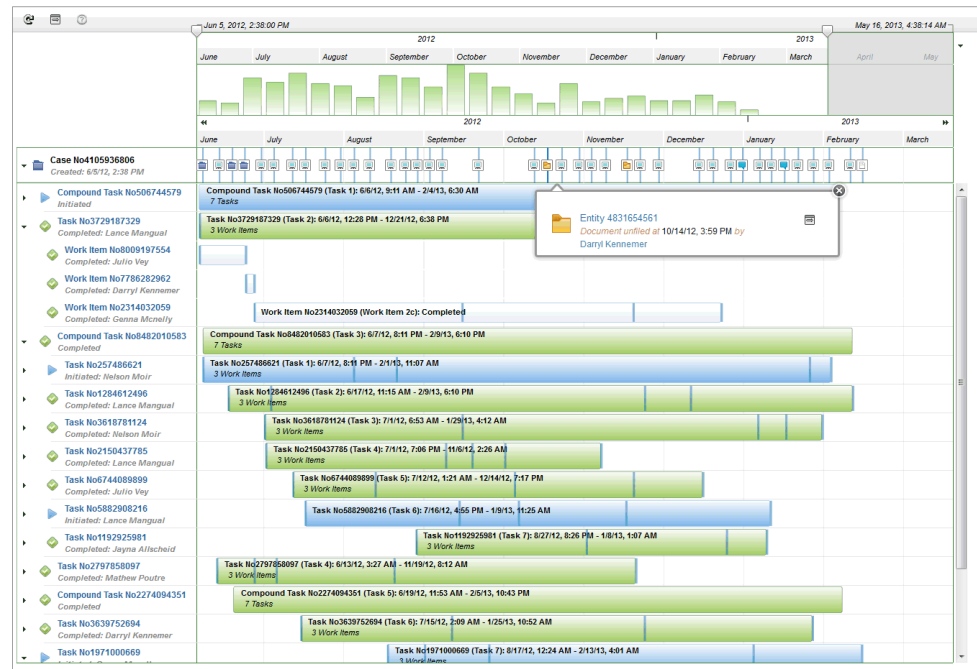
Case workers can define task flows

- Authorized case worker can define a sequence of actions that need to be performed on a case

- Supports use cases where the task flow is not well understood/known ahead of time

- Intuitive outline style text-based editor, enables defining work for humans

- The user is also able to copy and modify existing custom tasks when creating new ones
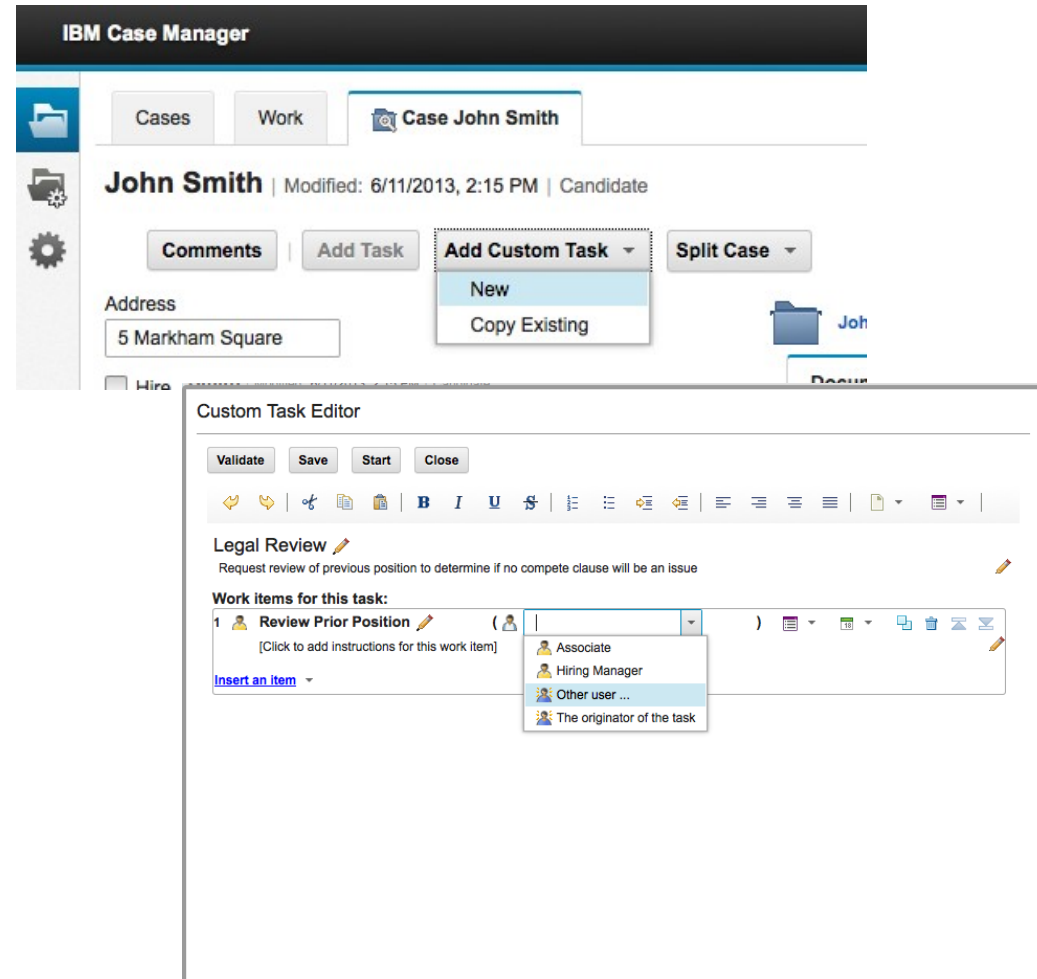
Unique case infrastructure and capability set

Case Infrastructure

Case Object Models   Case APIs   Solution Constructs   Task Object Model   Case Analytics Data Store

Case Object Model

- *Full case details, its parties & case interrelationships*
- *Ensures that case lifecycles are managed and relationships persist over time*

Task Object Model

- *Allows the case to respond to external events*
- *Provides unique model for managing ah-hoc activities*
- *Provides a detailed audit trail of activities*

Power of Case Client is exposed in APIs

- *REST APIs in case infrastructure for custom Web 2.0 development and interfaces*

Solution Constructs

- *Enables a rapid, iterative design/test sandbox*
- *Solutions can be templates that are reused*

Case Analytics Data Store

- *Predefined structures for case-related information for analytics*
- *Real-time and historical/summarized*
- *Structured and unstructured information*

Bottom line:

IBM Case Manager provides a comprehensive and extensible case infrastructure to quickly build a case-based solution

Case instance

- Cases are persisted in P8 folder structure using Content Engine constructs
- Case data lives on long beyond any individual task or action in a case
- All content management functionality can be applied to the case and its content

Tasks → **Task**

Comments are case folder annotations

Case folder

Case instance comes from a Case Type

Properties

Annotations → **Case comment**

Containment

History

Folder structure was defined in the Case Type

Other folder

CE Audit Log

Case History

Containment

Document

Documents comes from a document class
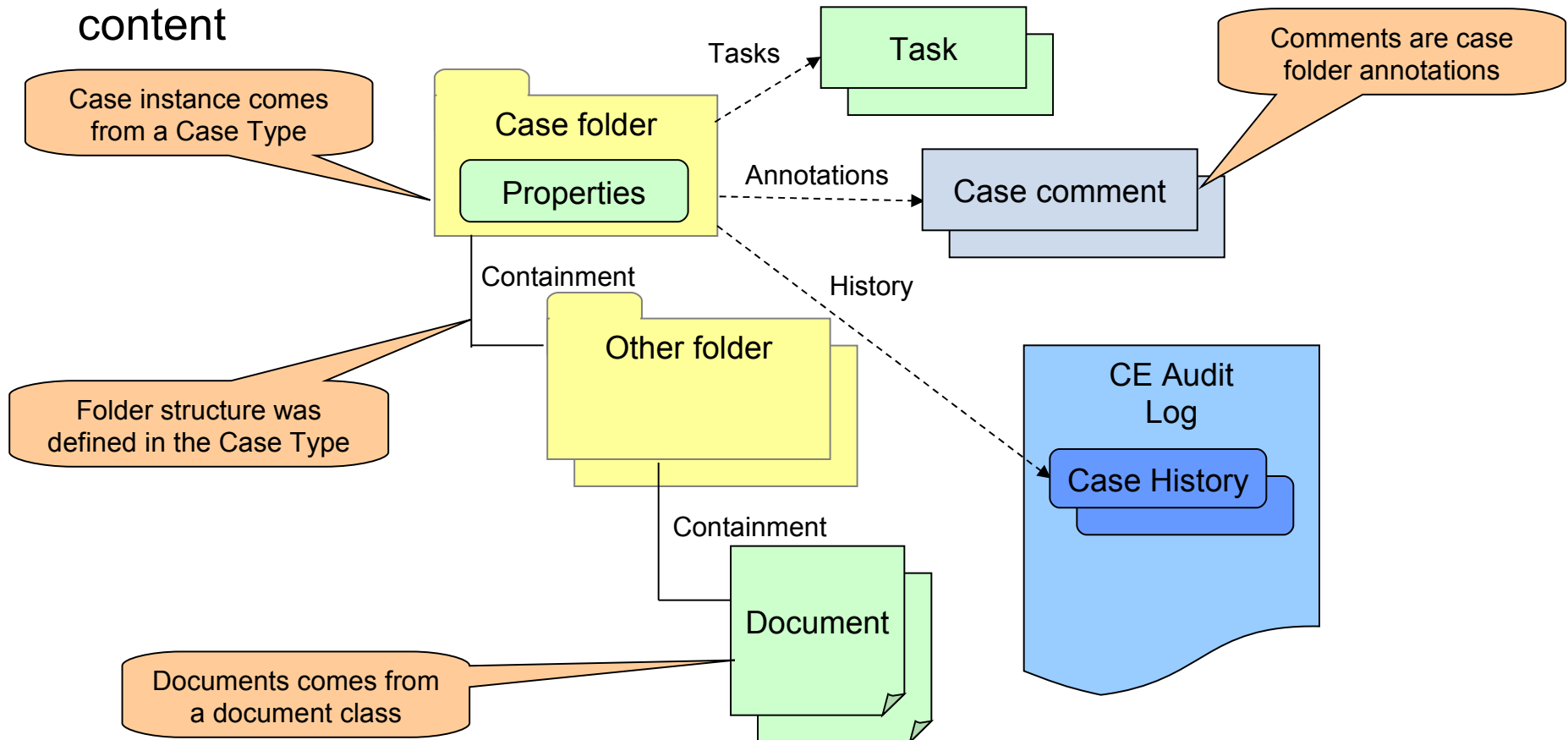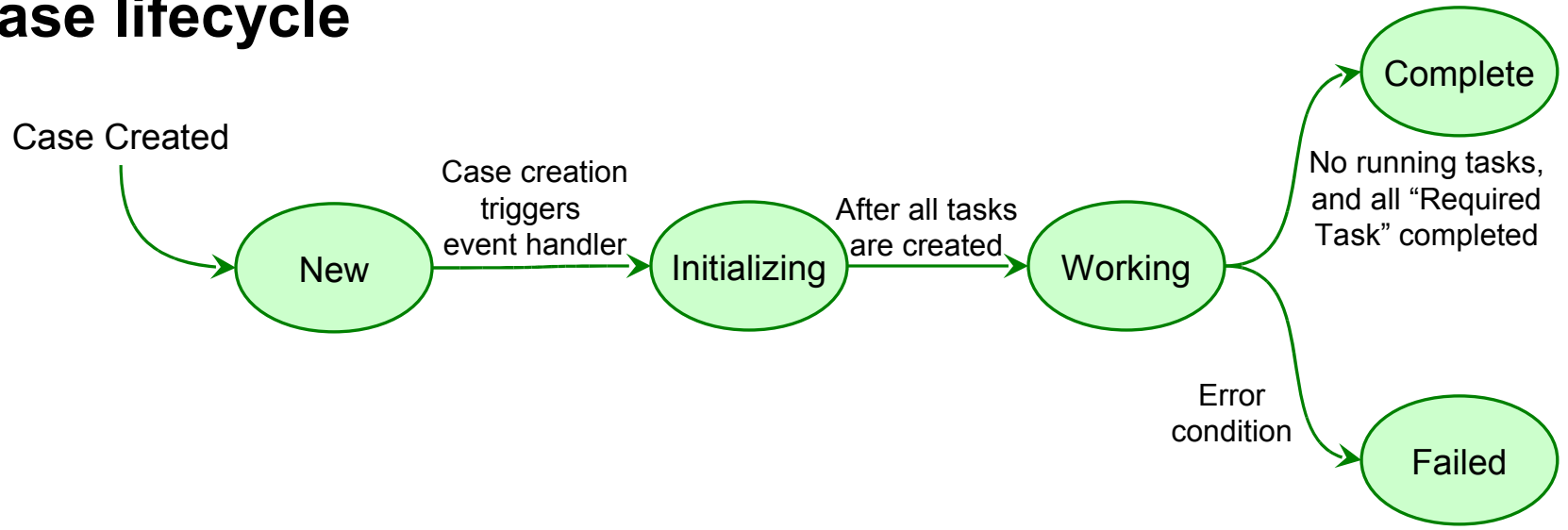
Case lifecycle

- Case is created in a new state, but that triggers the case creation event handler that moves the state to initializing

- The case creation event handler creates all the tasks and copy folder structure from case template

Task lifecycle
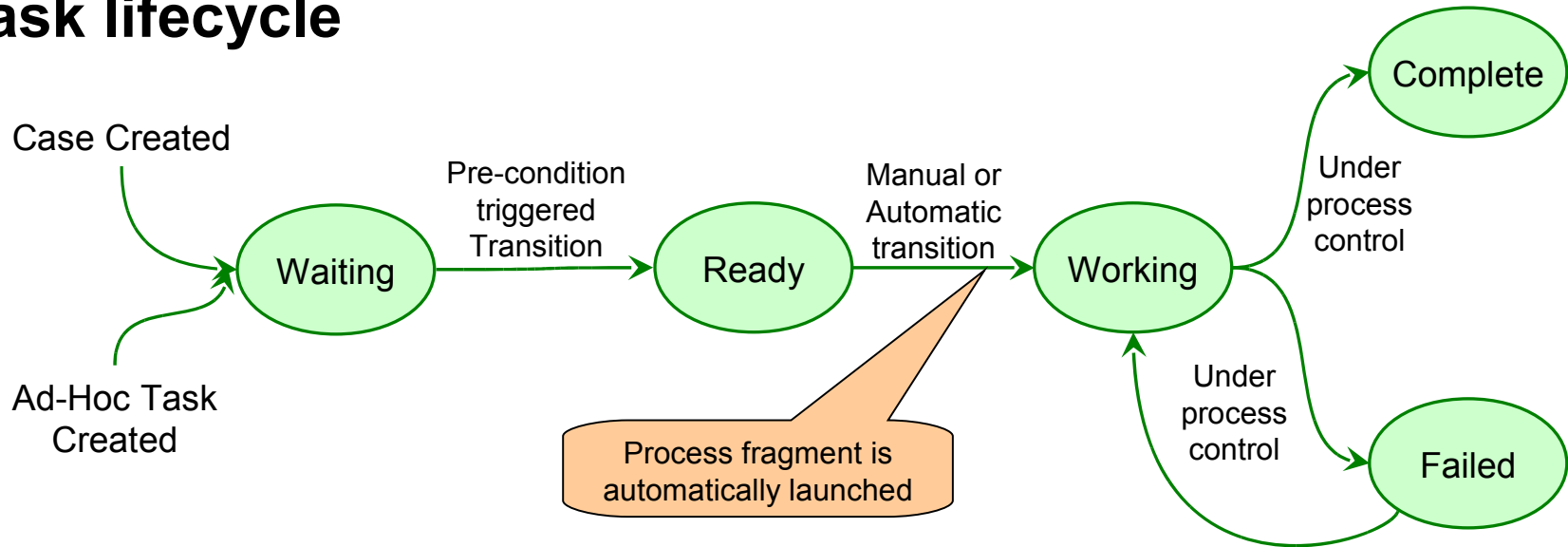
- Distinguish from case lifecycle (but there are dependencies)
- Waiting to Ready transition immediately when there is no precondition
- Ready to Working transition immediately for automatic tasks
- Ready to Working transition manually by the Case Worker executing the task
- Ad-Hoc tasks are automatic and have no preconditions, so they transition immediately from waiting to ready to working

Case split relationship

- Split cases are related via a case relationship link
- History in both cases reflect the split
- User interface allow navigation between related cases via the history

Case folder

Properties

Case relationship link

Case folder

Properties

Task

Case comment

Task

Document

Case comment

Document

Bidirectional link object with description, and type = split

Basic deployment topology

Target object store folder structure

Root Folder

- IBM Case Manager

  - Solution Deployments

    Contains all the solutions deployed in this object store

    - <Solution name>

      - Case Types

        - <case name>

          + Case Structure

            Contains for each Case Type, the information needed to create case instances.

          - Cases

            Cases are stored in a year, month, day, hour folder structure to avoid large amount of instances in a single folder

            - <year>

              - <month>

                - <day>

                  - <hour>

                    + <case instance>

                      Actual case folder

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P8 task implementation

- Task workflow structures live in the same object store as the case data
- Very efficient interaction between case data and workflow
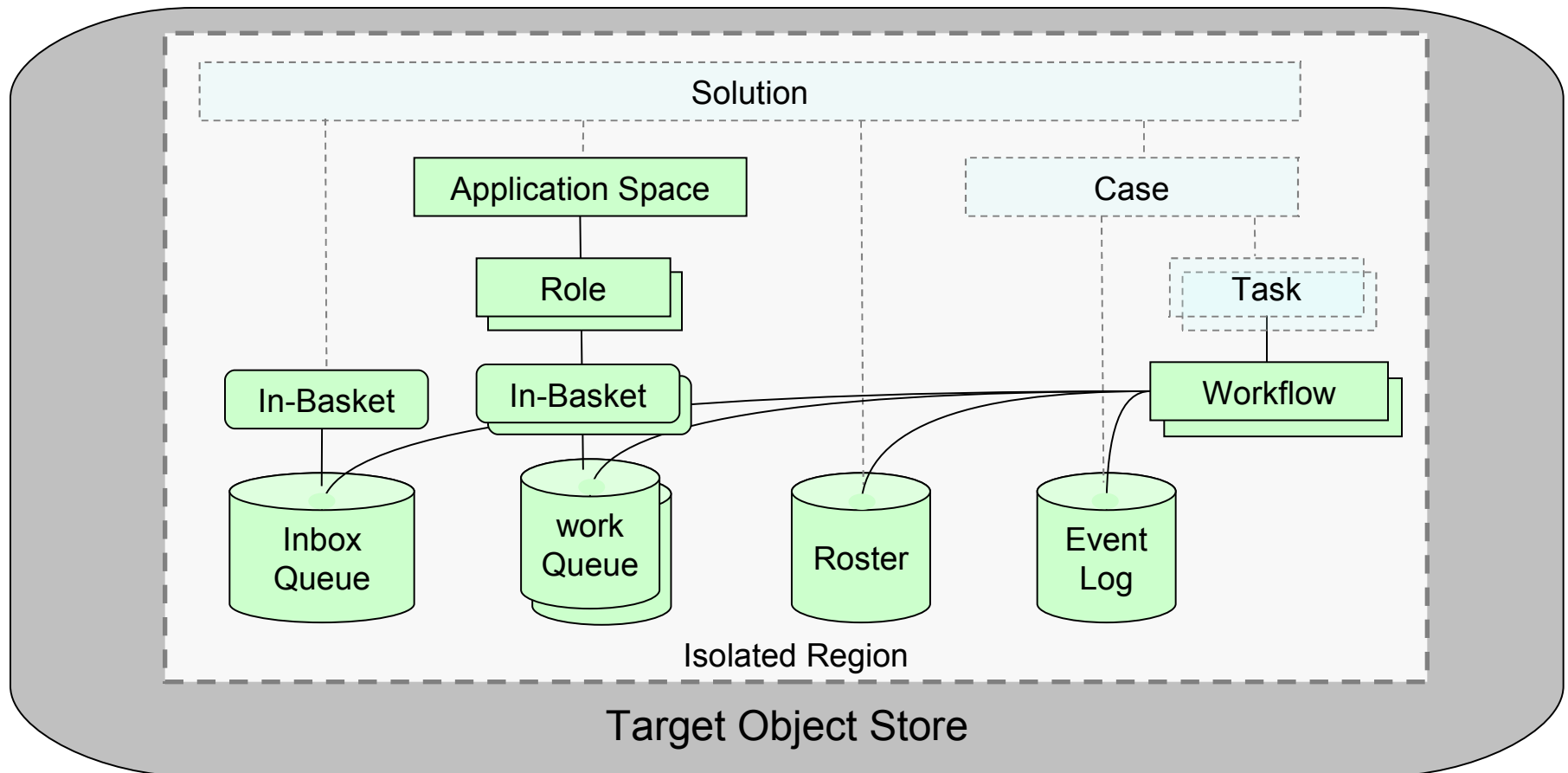
Case Builder and P8 Process Designer

- Roundtrip between Case Builder and P8 Process Designer is useful
  - Full P8 BPM functionality can be implemented this way
- Roles, In-Baskets, and Tasks implemented with Case Builder can be modified and enhanced using the P8 Process Designer
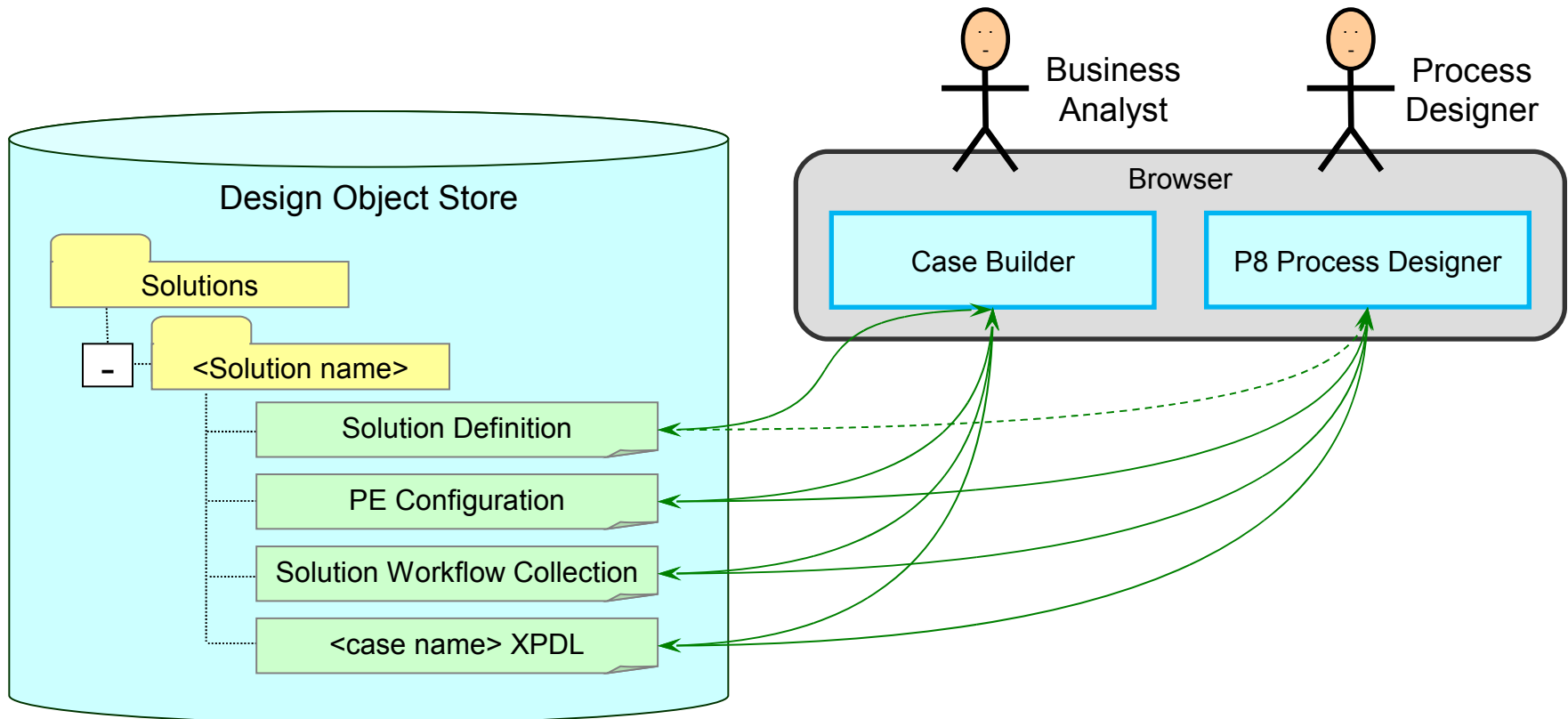
P8 task runtime

- Case data lives in the case folder, but can be accessed from the workflows
  - F_CaseFolder.<property name> to access case properties
  - F_CaseTask.<property> to access task information
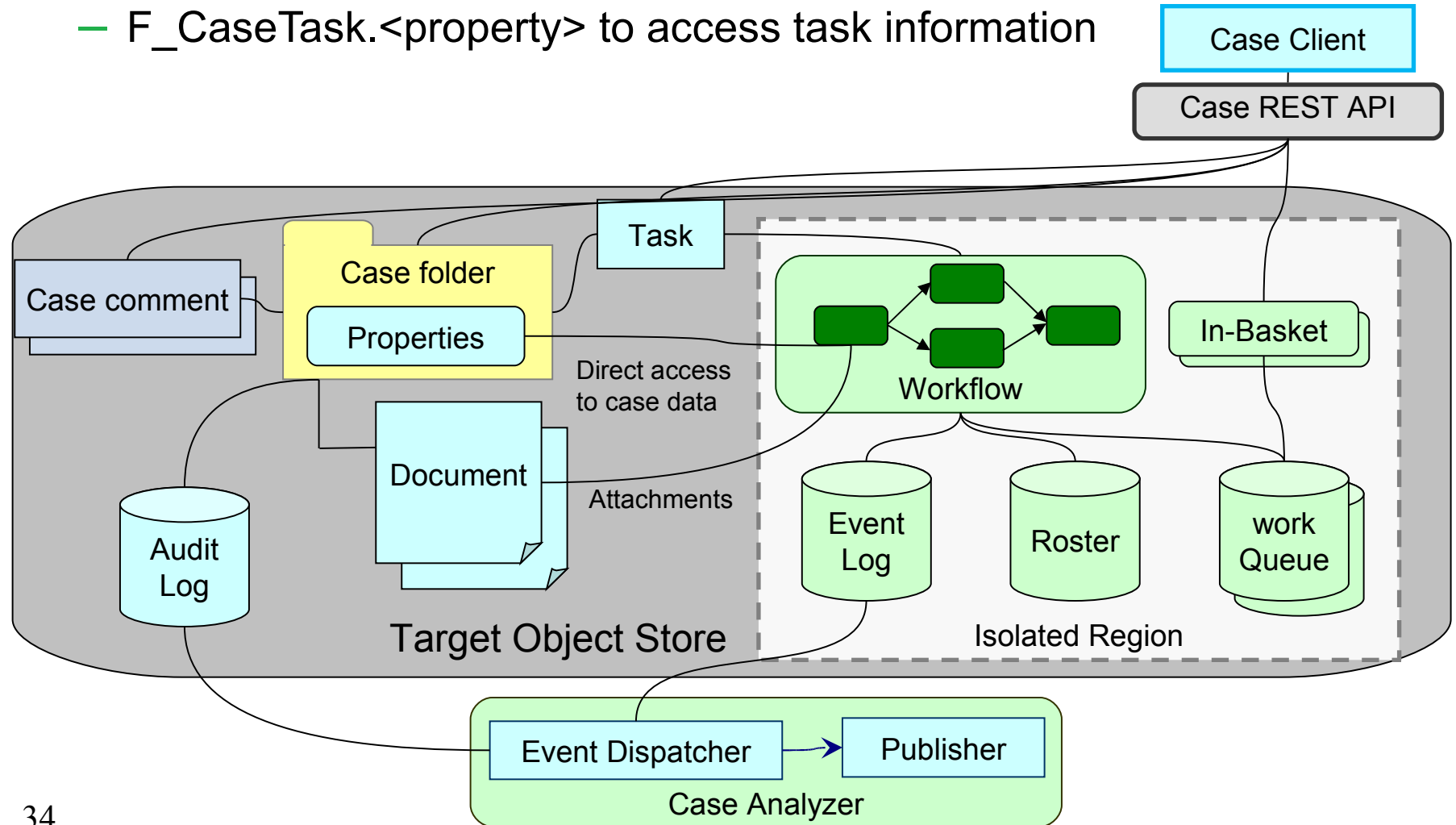
External data support

- Each solution can be configured to invoke a REST external data service

- This external data service is used by the Case REST API when case data is retrieved

- The external data service can be used to
  - Influence property values based on data from an external source
  - Modify property attributes (for example minimum and maximum)
  - Enforce dependencies between properties

- The external data service must implement a POST operation
  - The payload contains the relevant case data plus a request mode
  - The returned payload is merged with the case data and returned to the case client

External data support - Component architecture

Browser

Business Space

Case Widgets

Widgets do not interact with the external data service

Customer provides REST feed to provide external data

Single external data service per solution

Process work items, retrieve work, In-basket, etc.

Interact with documents, Search, etc

Create cases, modify case properties, case history, comments, etc.

| PE REST | CMIS | Case REST | REST | External Data Service |

Application Server

Case REST API merges data from Case Folder with external data from external data service

External Data

External System

• • • •

External Data

External System

Interaction diagram for case creation using external data
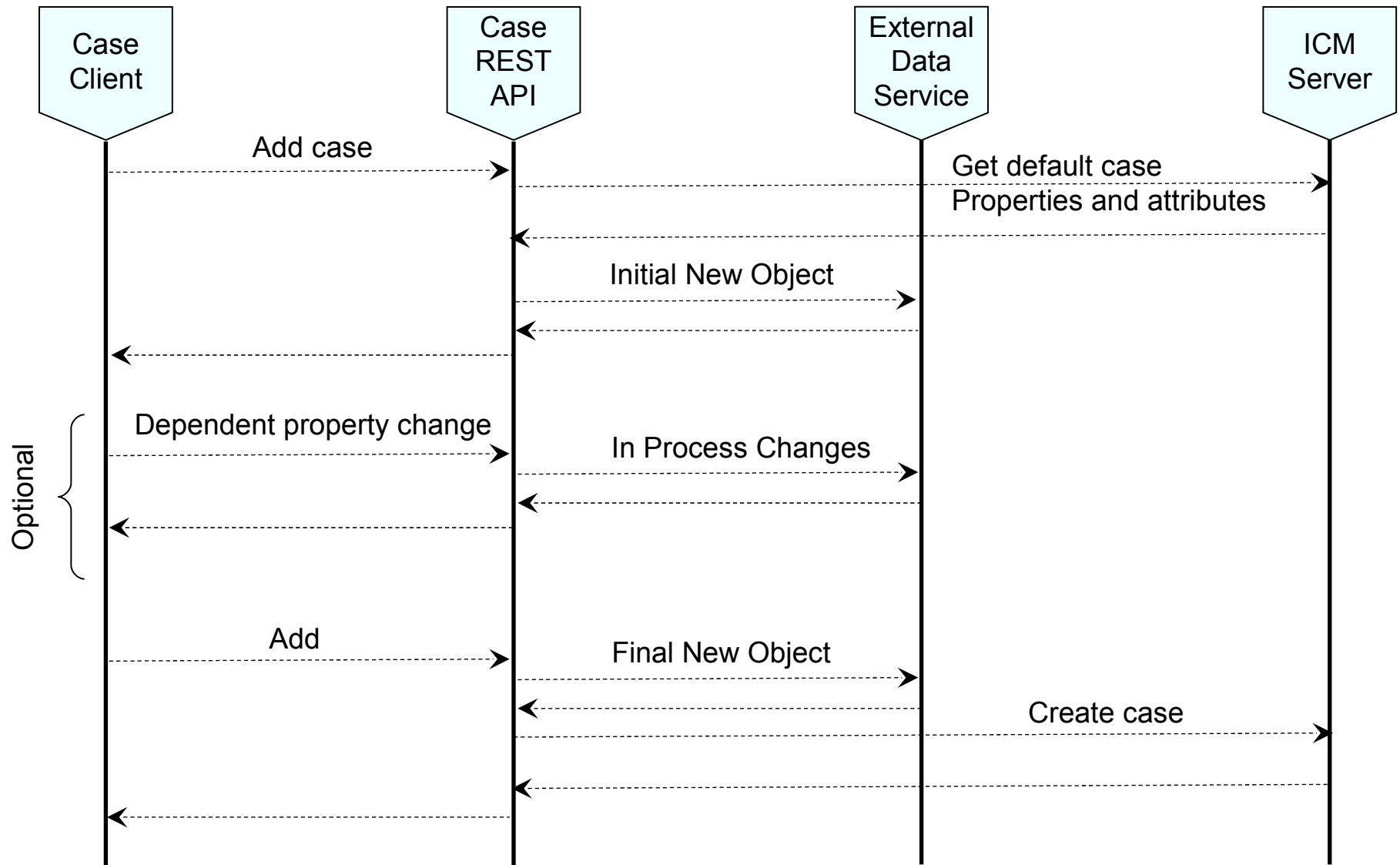
Interaction diagram for using external data
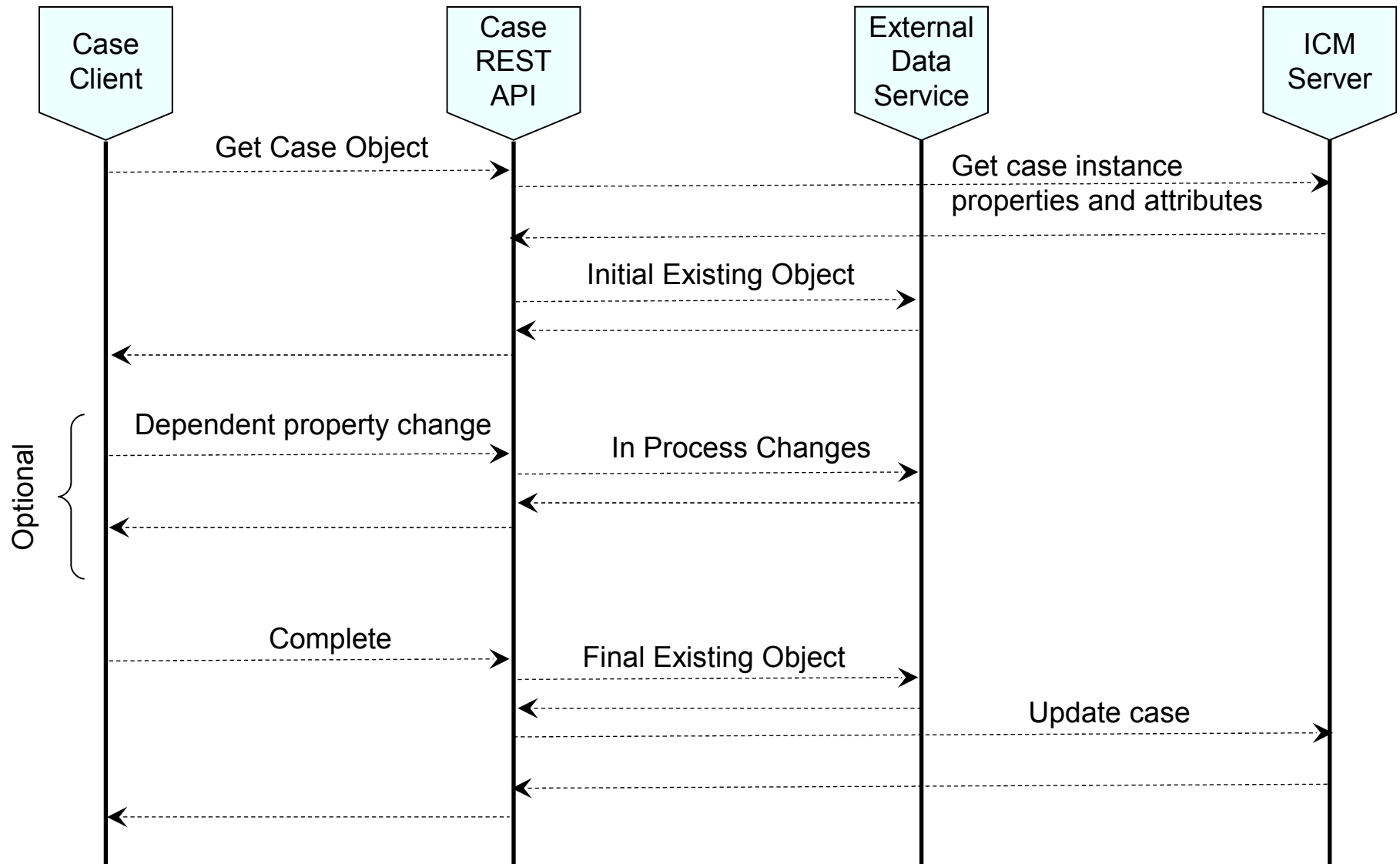
Powerful analytics for better case outcomes
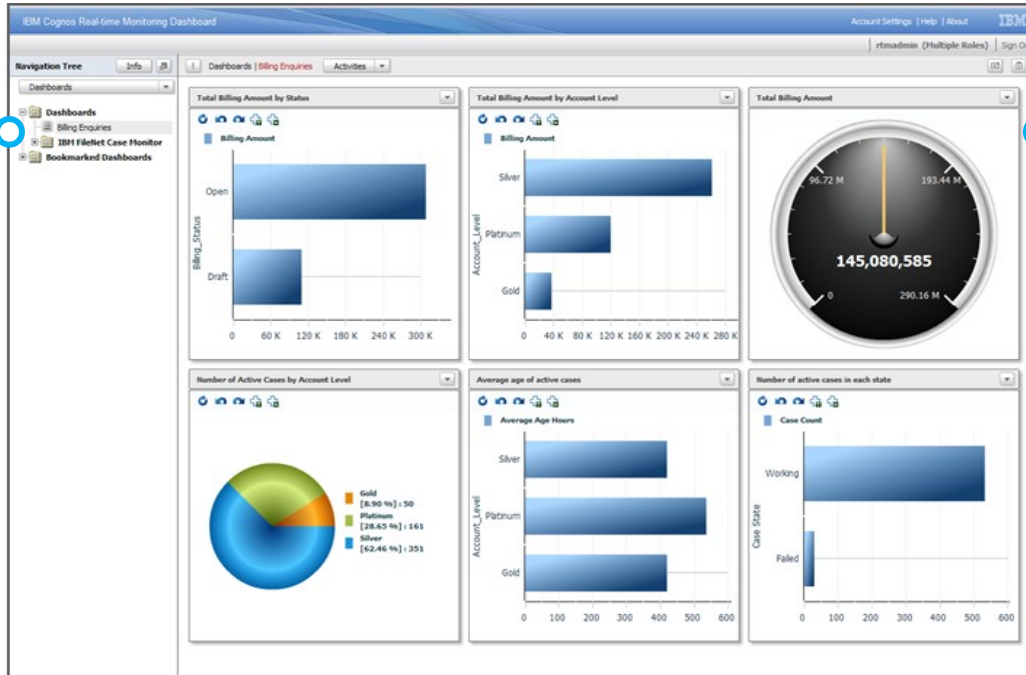
Case Analytics

Structured   Unstructured
                  Real time   Persisted

- **Comprehensive reporting and analysis**
  Gives case managers visibility across all information types to assess and act quickly

- **Real-time dashboards**
  Understand issues before they become a problem

- **Unique content analytics for discovering deeper case insight**

Crawl and index case content and metadata. Discover patterns, trends and insights across cases

Bottom line:
Case managers need insight in order to impact results.

IBM Case Manager – case analytics

Case Analyzer (Historical Reporting)

Excel and Cognos enable case and process analysis

Dynamic - Drill down, slice and dice,
filter, etc

High performance, large volume analysis
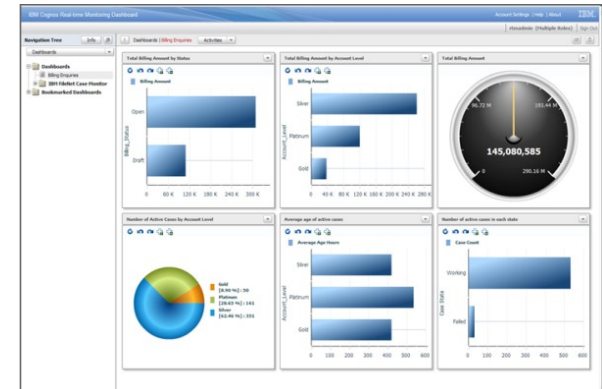
Case Monitor (Real Time Dashboards)

Cognos RTM 10.1 provides real time cases monitoring

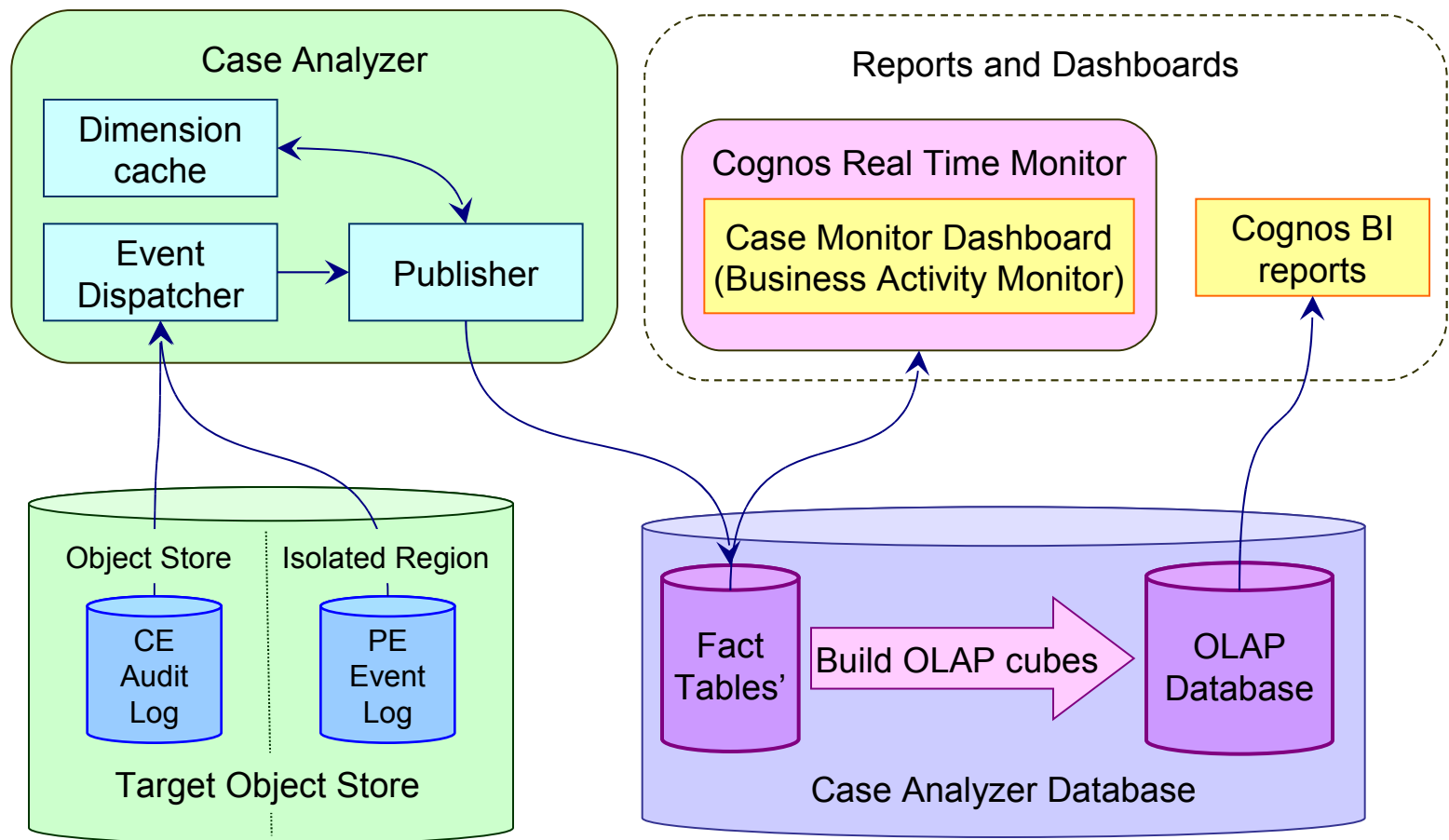Threshold monitoring and alert generation
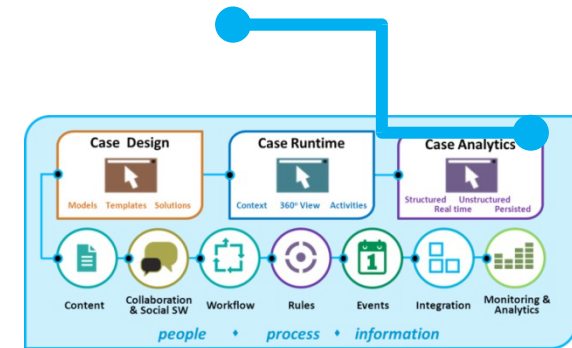
Content Analytics

Crawl and index case contents and metadata
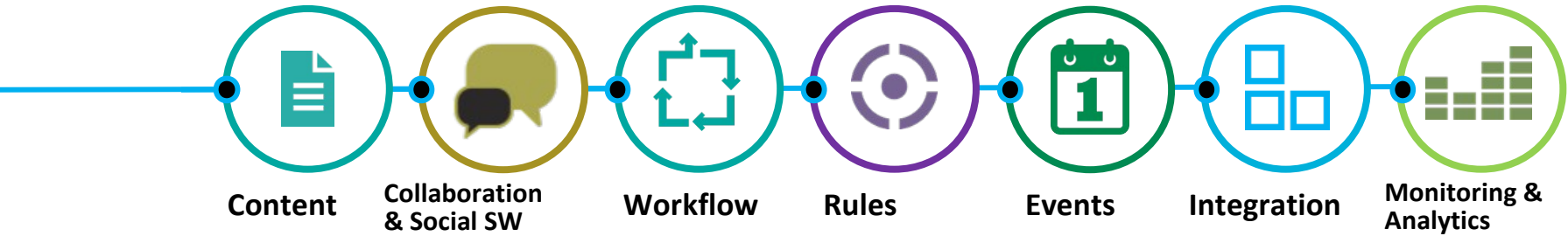
Discover patterns, trends and insights across cases

Example : Most common compliant in user comments in cases

Case analyzer

- Case Analyzer combines content and process information to present a real time picture of the case

Underlying capabilities

| Content | Collaboration & Social SW | Workflow | Rules | Events | Integration | Monitoring & Analytics |

Integrated and bundled capabilities:

- Content Management
- Process Management
- WebSphere ILOG jRules*
- Content Analytics (Text analytics)*
- Cognos Real Time Monitoring (Real time analytics)*
- Lotus SameTime (embedded awareness in case runtime and web chat)*

Bottom line:
IBM Case Manager leverages and integrates best of breed capabilities from across IBM

*Denotes usage limited to case solutions

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Key Themes and Customer Benefits

- **Streamlined Software Management and Deployment**
  - Reduction in loosely coupled, separately managed components will significantly reduce complexity and troubleshooting that negatively impact time to value

- **Enhanced Solution Development**
  - Deliver faster time to ROI by making it easier to design, build and deploy case solutions

- **More Case Centricity**
  - Providing case workers with more visibility into the state of a case and offering additional capabilities to drive cases to successful outcomes

- **Much More Flexible and Extendable Case Client Application Platform**
  - Deliver a client application platform that is consistent with other ECM solutions and allows much more reuse of existing components when customizing or extending

IBM®

Streamlined Software Management and Deployment

Built On 5.2 Platform

Simplified Install and Deployment

Web Based Administration

Enhanced Solution Configuration

Built-in Page and Data Layout Designer

Built-in Rules

Collaborative Solution Design

More Case Centricity

Case Visualizer

Case Worker Defined Task Flows

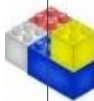# Much More Flexible and Extendable Case Client Application Platform

Enhanced Case Client UI

Content Navigator document capabilities

Widget enhancements & Case Operations

Case Client UI Toolkit

Mobile Case Client

Expanded Platform Support

IBM

Summary

- IBM Case Manager is a comprehensive framework covering all aspects of the case lifecycle

- It features a solution development environment aiming at rapid development and deployment of Advanced Case Management solutions.

- Its architecture leverages the P8 infrastructure so that a runtime integration of ICM slutions with (other) P8 applications is very well supported

- The ICM case model supports both the static (content) and dynamic (process) aspects of cases based on an approach featuring different layers of abstraction

- It integrates many case related capabilities of the IBM portfolio as well as supporting the usage of other IBM process engines.