

Predictive Human Capital Management

How Predictive Analytics Can Help Organizations Manage Their Workforce

Business Analytics

www.spss.com/perspectives

Introduction

- Changing Face of Human Resources
- Role of Predictive Analytics in The Employee Life Cycle
- SPSS Technology Fit to Human Resource Business Issues
- Predictive Analytics in Action
 - Customer Success
 - Usage Scenario
- Wrap-Up

An Ideal Human Resources Practice Model



Human Resources

HR operates a variable and cost-efficient model to deliver high-quality services.



Managers and employees are able to access HR services and programs by using an appropriate range of effective and user-friendly delivery channels.



Clear linkages exist between human capital activities and business results.



Trends Impacting Human Resources Today

- Changes in worker expectations
- Changing demographic landscape (aging population)
- Shortages of key resources
- Increasing competition for key resources

An Emerging HR Paradigm

Traditional paradigm

HR provides support to the business units when asked

HR professionals are valued for their responsiveness to inquiries

HR deals with the soft side of the business

People problems are the responsibility of the HR department

The HR department owns employee data

Emerging paradigm

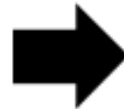
HR proactively identifies human capital impact on business opportunities and flags risks

HR professionals are valued for their ability to provide qualified service to the business

HR uses the same data-driven, fact-based approach as the rest of the organization

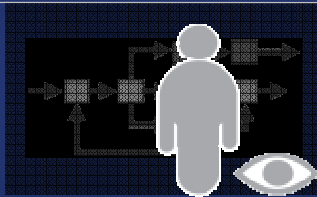
Managers and HR jointly apply their experience to address employee issues

Employee data is a shared responsibility between managers, employees, and HR



Imagine if you could...

*...identify at-risk
resources before they
leave?*



Mobile County Public School System

Insight

- There are early indicators when a student begins to have problems

Implications

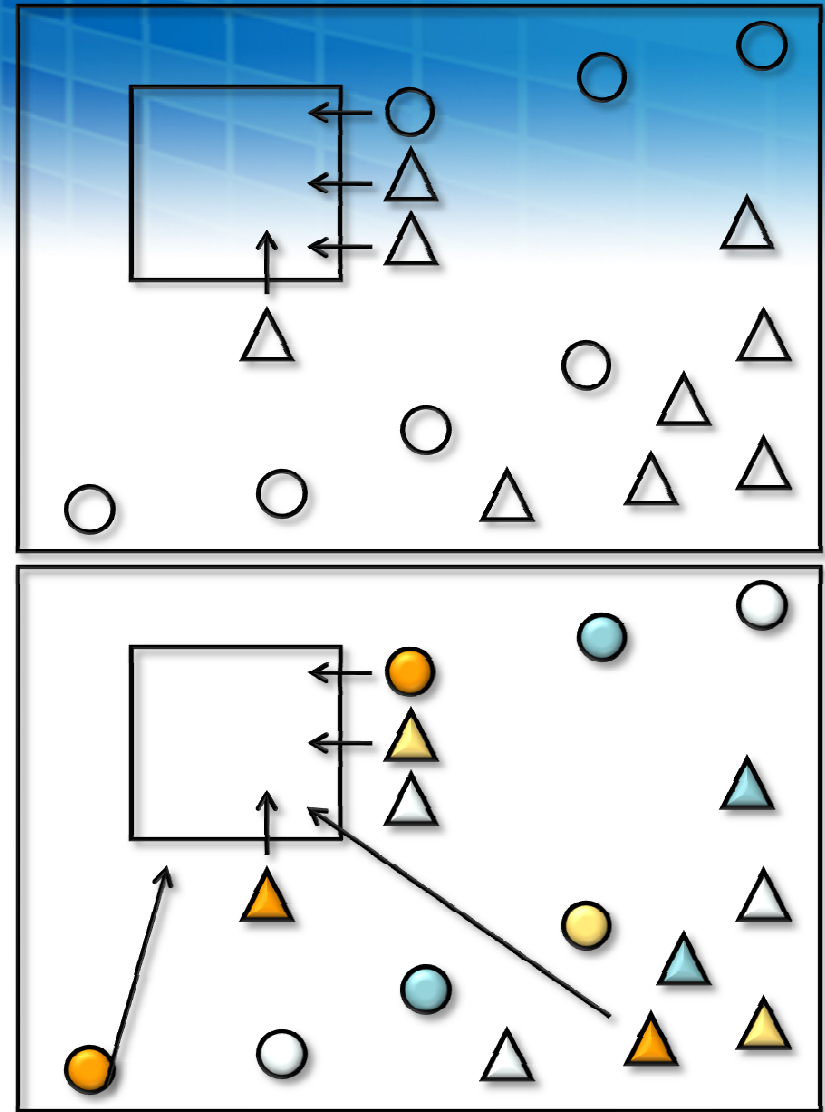
- Proactive intervention when students cross at-risk thresholds
- Accountability information transformed into a strategic asset
- Better identify which programs are likely to work for each student

Massive Amounts of Data

- Employee history
- Organizational structure
- Employee Performance
- Resumes
- Exit Interviews
- Employee Demographics
- Employee Satisfaction
- Employee Development
- ...and more

Value Propositions

- Attract
 - Reduce costs of employee acquisition and increase employee quality by targeting prospects with profiles similar to high performing employees
 - Target employees with the potential to be most productive
- Grow
- Retain



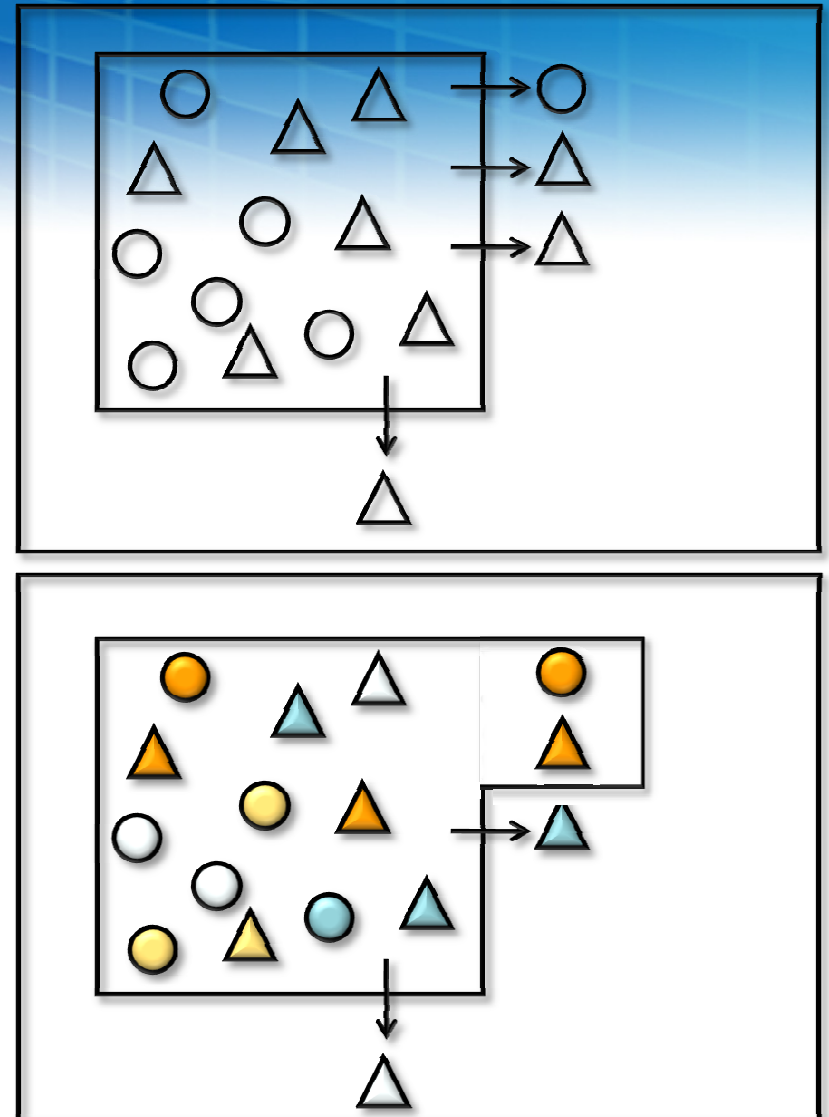
Value Propositions

- Attract
- Grow
 - Increase employee performance by targeted training and development initiatives
 - Model best practices in training and development efforts
 - Link development to performance
- Retain

		2010					
		A	B	C	D	E	F
2009	New		Green		Green		
	A	Grey				Green	
	B		Grey	Green			
	C			Grey	Green		
	D		Yellow		Grey		
	E	Yellow				Grey	
	F			Yellow			Grey

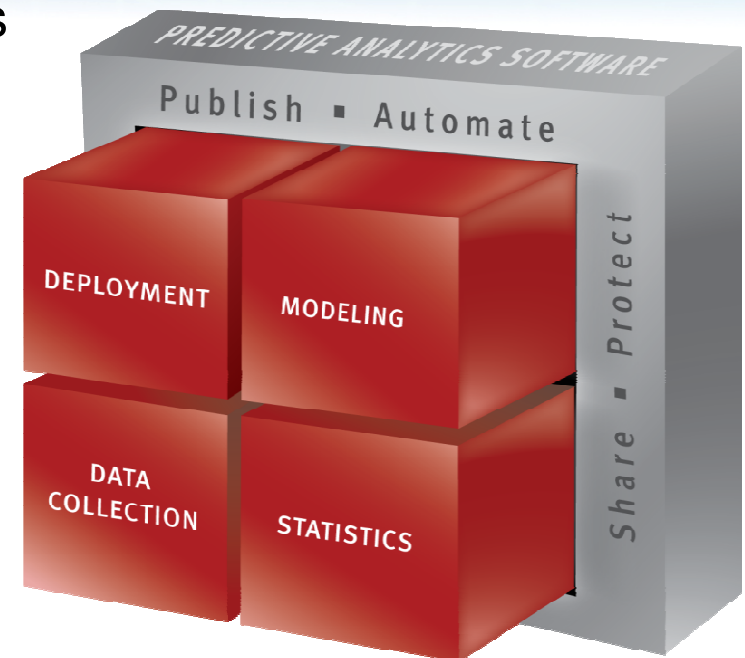
Value Propositions

- Attract
- Grow
- Retain
 - Identify high value employees at high risk of leaving
 - Predict staff shortfalls or resource gaps
 - Proactively plan for resource shortages
 - Get the right resource, in the right place, at the right time



IBM SPSS Product Portfolio

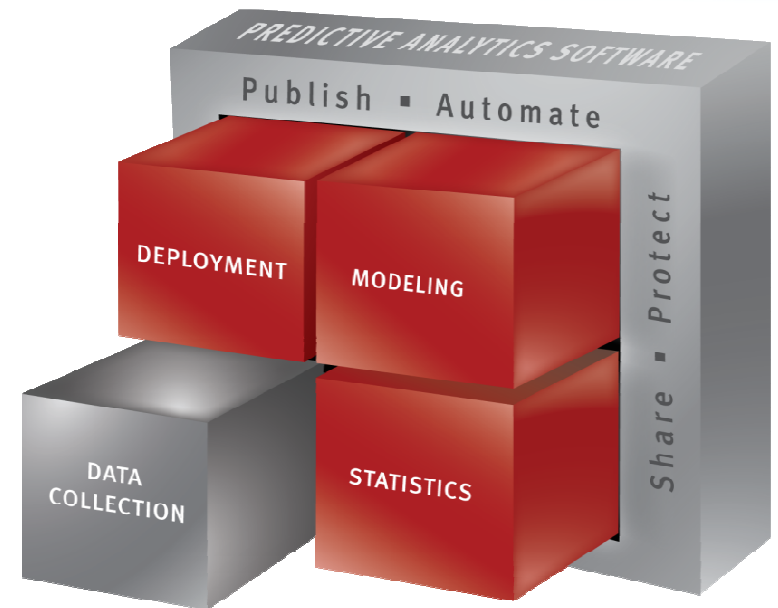
- Data Collection:
 - Delivers an accurate view of attitudes and opinions
- Statistics:
 - Drive confidence in your results and decisions
- Modeling:
 - Bring repeatability to ongoing decision making
- Deployment:
 - Maximize the impact of analytics in your operation



Data Collection Family

Get a more accurate view of employee attitudes and opinions

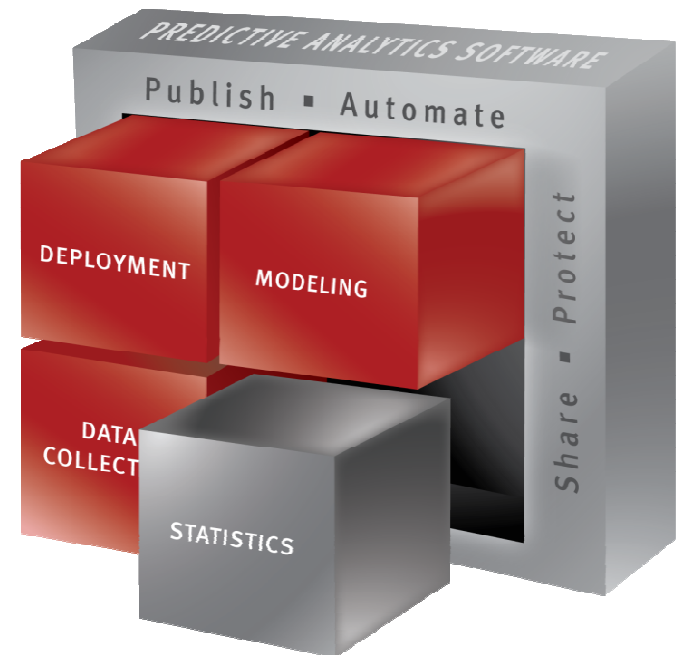
- Enables you to:
 - Gather feedback from all employees in any language, through multiple channels
 - Prepare data from multiple sources for analysis
- Without Data Collection
 - You're not listening to your employees
 - You don't have access to what they are thinking, just what they are doing



Statistics Family

Be confident in your results and decisions

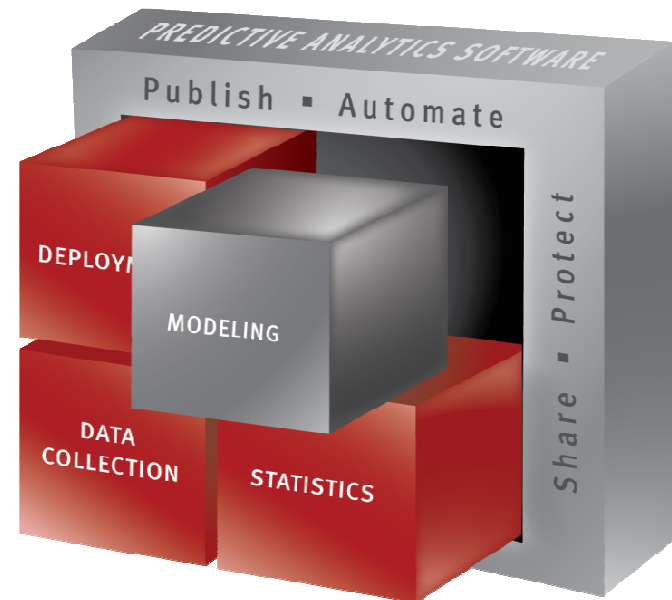
- Enables you to:
 - Understand your data better
 - Validate your assumptions
 - Test hypotheses
- Without Statistics?
 - You're making assumptions based on false perspectives
 - You're making business decisions based upon gut feel



Modeling Family

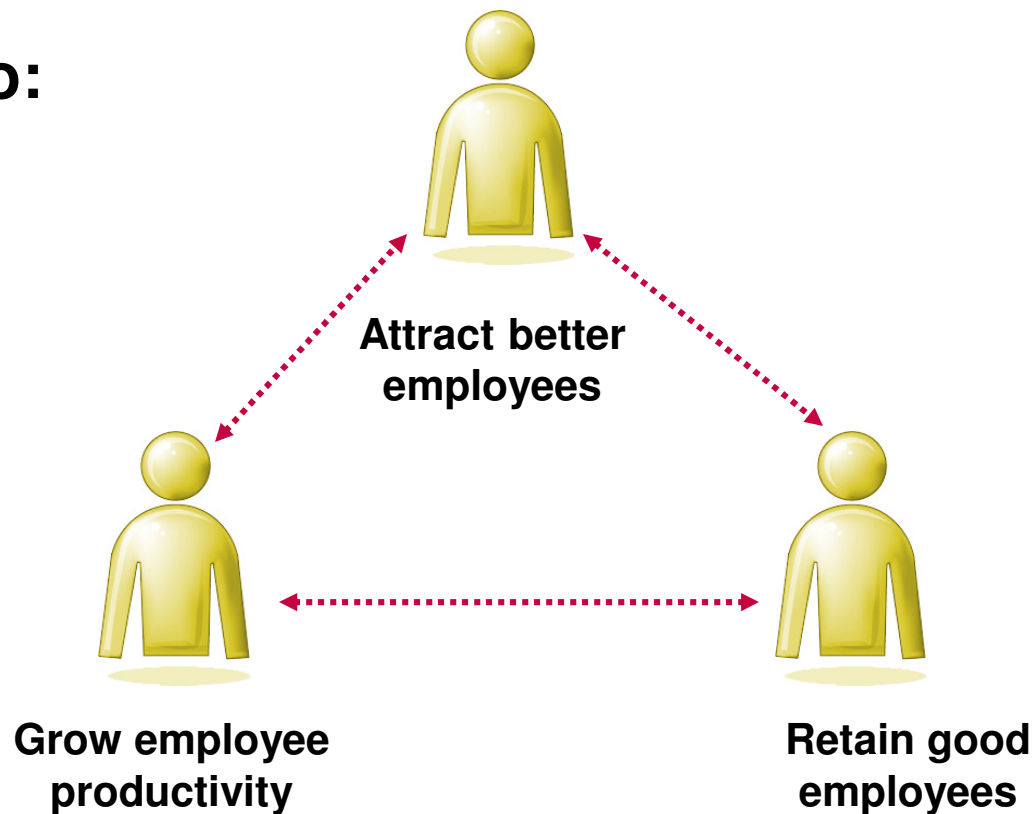
Bring repeatability to ongoing decision making

- Enables you to:
 - Model the hidden relationships in your data
 - Infer the outcome of every interaction
- Without Modeling
 - Every interaction is ad-hoc
 - You're counting on instinct to handle situations appropriately



Challenges to An Effective HCM Strategy

How to:



Predictive analytics helps boost attendance and human resource efficiency

Business challenge

A Strategic Human Resource Management research and consulting firm, was engaged by one of Canada's largest employers to identify the drivers behind the high levels of absence that the company was experiencing.

Solution

Using IBM SPSS software, they conducted surveys and analysed 250 million bytes of data to produce insights about absence, quality issues and work practices. As a result, the employer changed its attendance management processes and introduced work practice improvements.

“Using IBM SPSS tools and technology, we were able to find out what challenges the employees faced, and take measures to address them.”

— President

Benefits

- Identified the factors behind high levels of employee absence
- Introduced new attendance management and work
- Significant reduction in employee absenteeism

Baruch College: The City University of New York



Successfully gains and retains students using predictive analytics

Business challenge

In a climate of declining enrollments for many colleges, Baruch was looking for a way to attract and retain students most likely to thrive and succeed at its institution.

Solution

Using IBM SPSS predictive analytics, the school created well-defined market clusters and effectively implemented strategies to recruit, identify at-risk students, and predict retention.

“These days, no meeting to make policy changes takes place without analysis based on predictive analytics.”

— Jimmy Jung
Assistant Vice Principal
Baruch College

Benefits

- Increased applications to its business school by 7.1 %, when other schools were seeing significant decreases
- Achieved a 21 % annual increase in transfer students
- Decreased dropouts significantly by using predictive analytics to improve the placement of freshmen in introductory classes

BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT



Candidate:
Submits resume

BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT



Prioritized list of applicants based on likelihood of success

BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT



Invite for an interview



Prioritized list of applicants based on likelihood of success



BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT



Prioritized list of applicants based on likelihood of success



Scoring applicant during interview using additional data

BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT



Rejection letter



Prioritized list of applicants based on likelihood of success



Scoring applicant during interview using additional data



BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT



Existing employee:
Concerned about recent travel schedule



Prioritized list of applicants based on likelihood of success



Scoring applicant during interview using additional data



BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT



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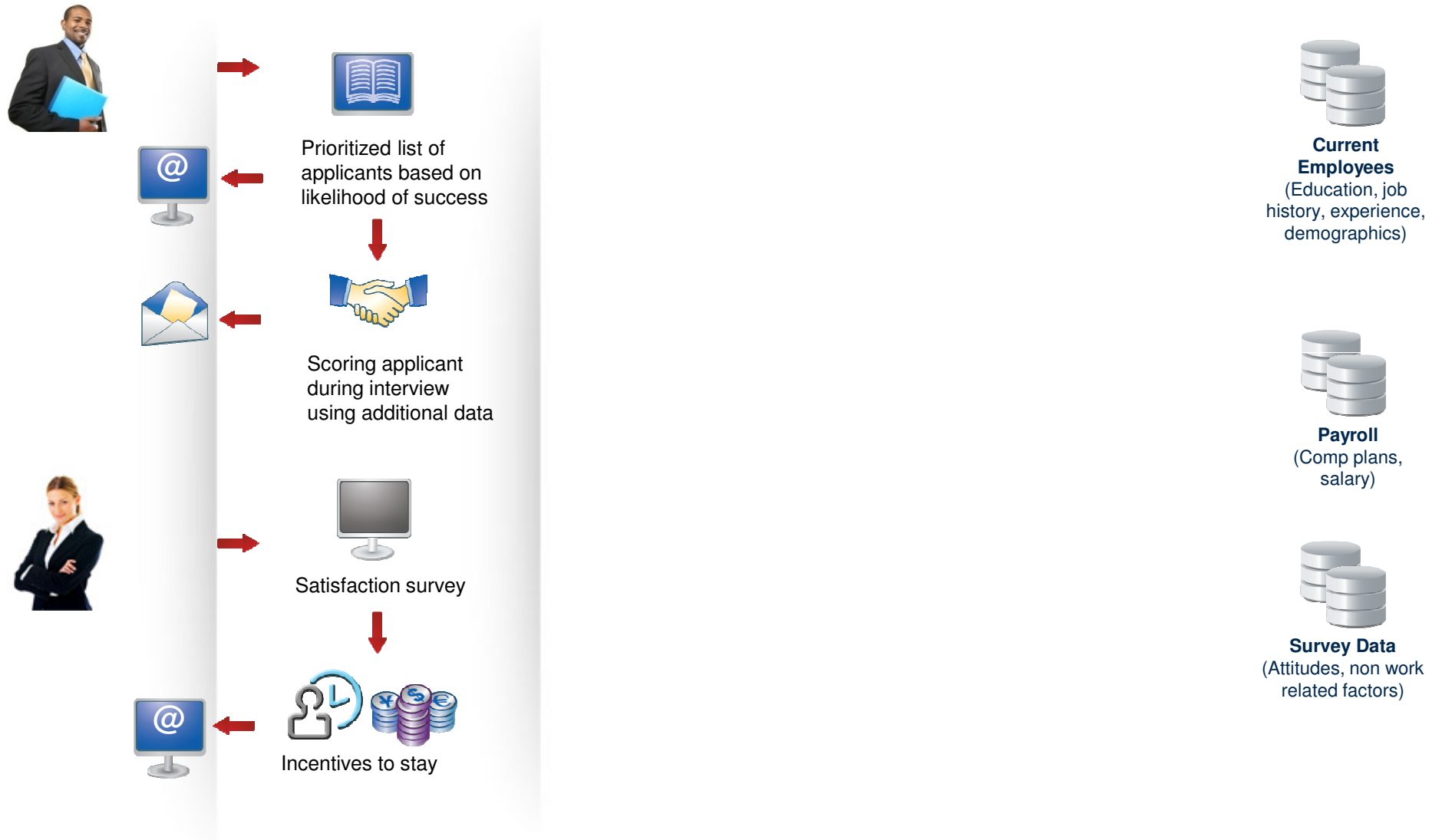
BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT

Organization uses predictive analytics for recruitment and retention efforts



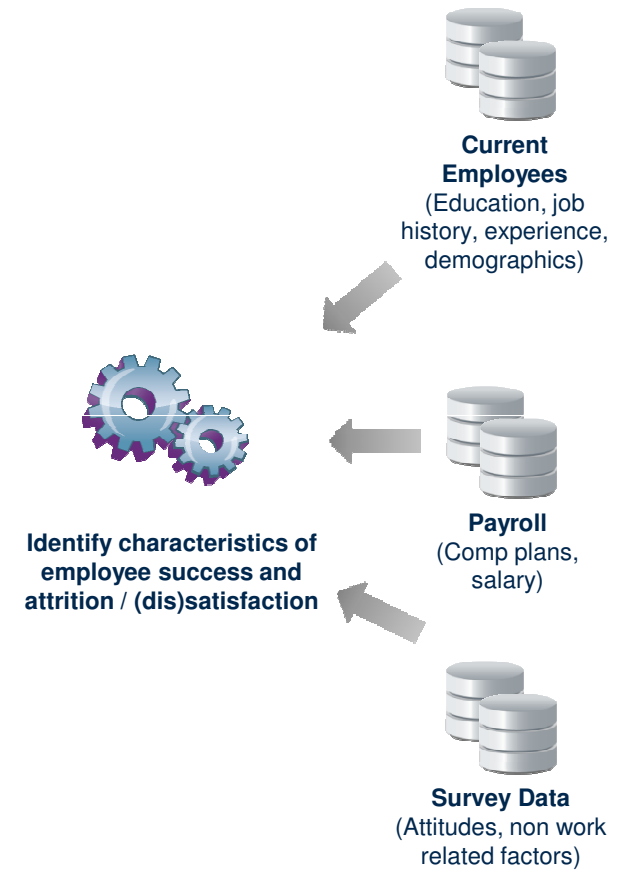
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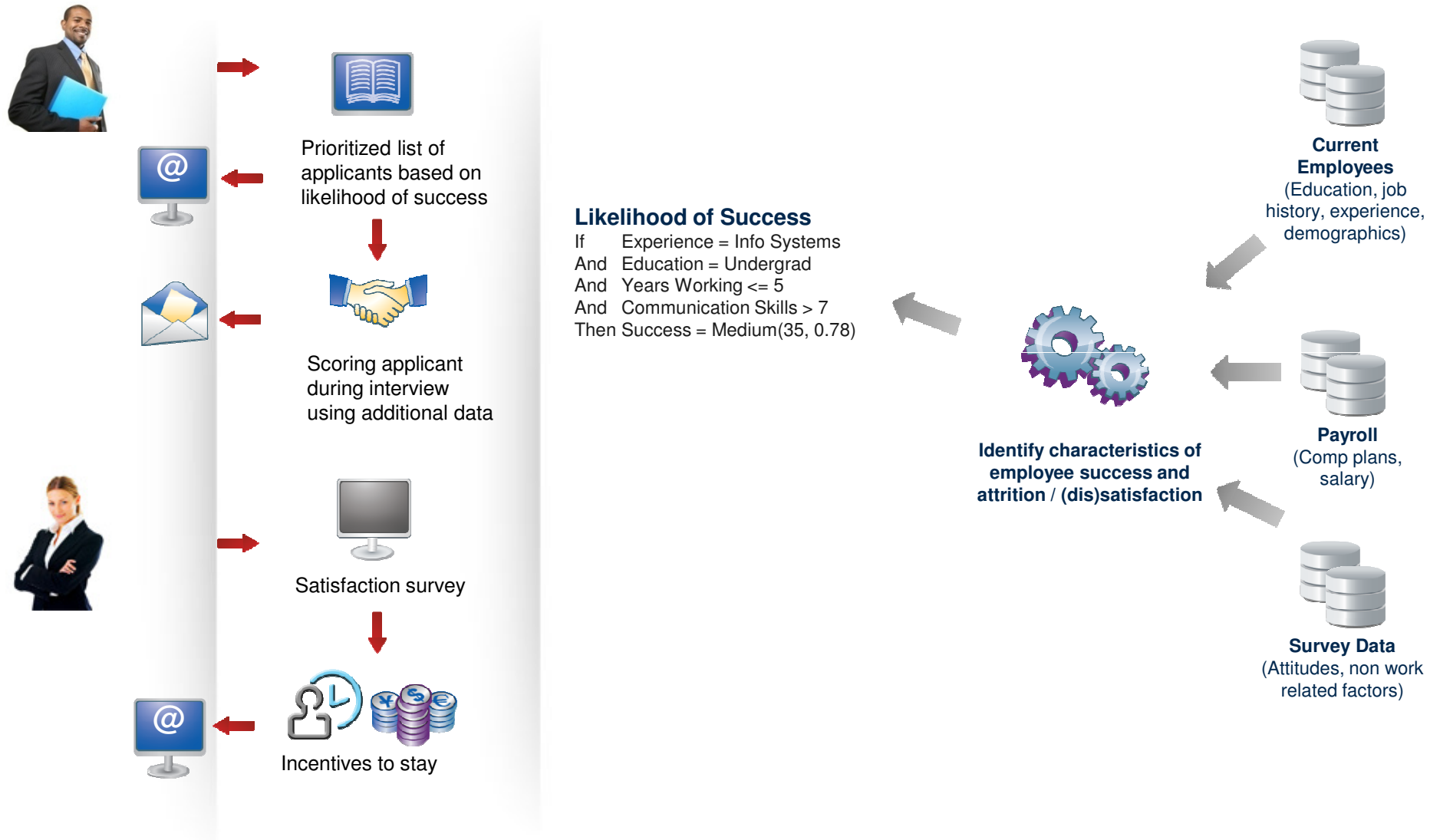
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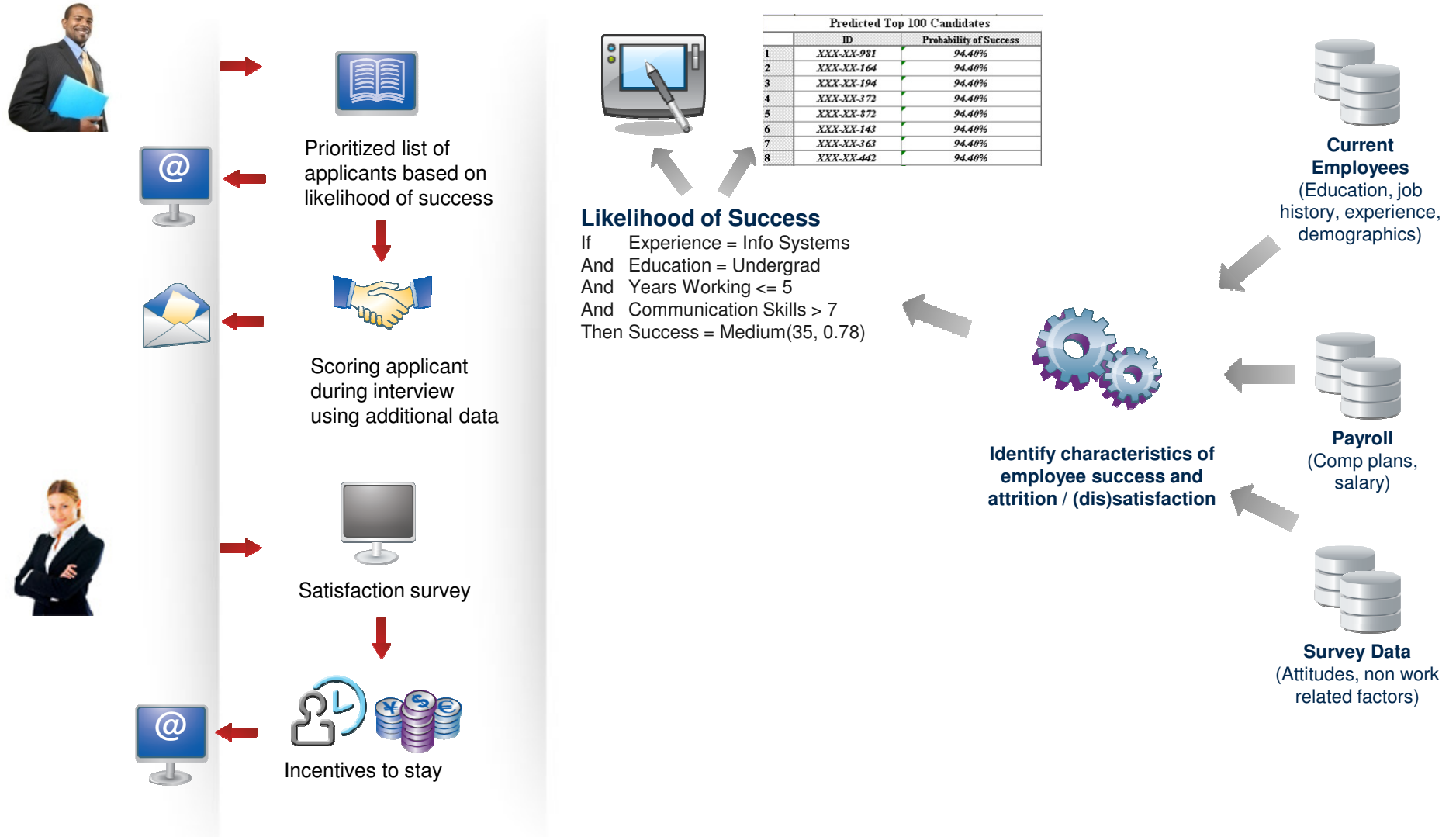
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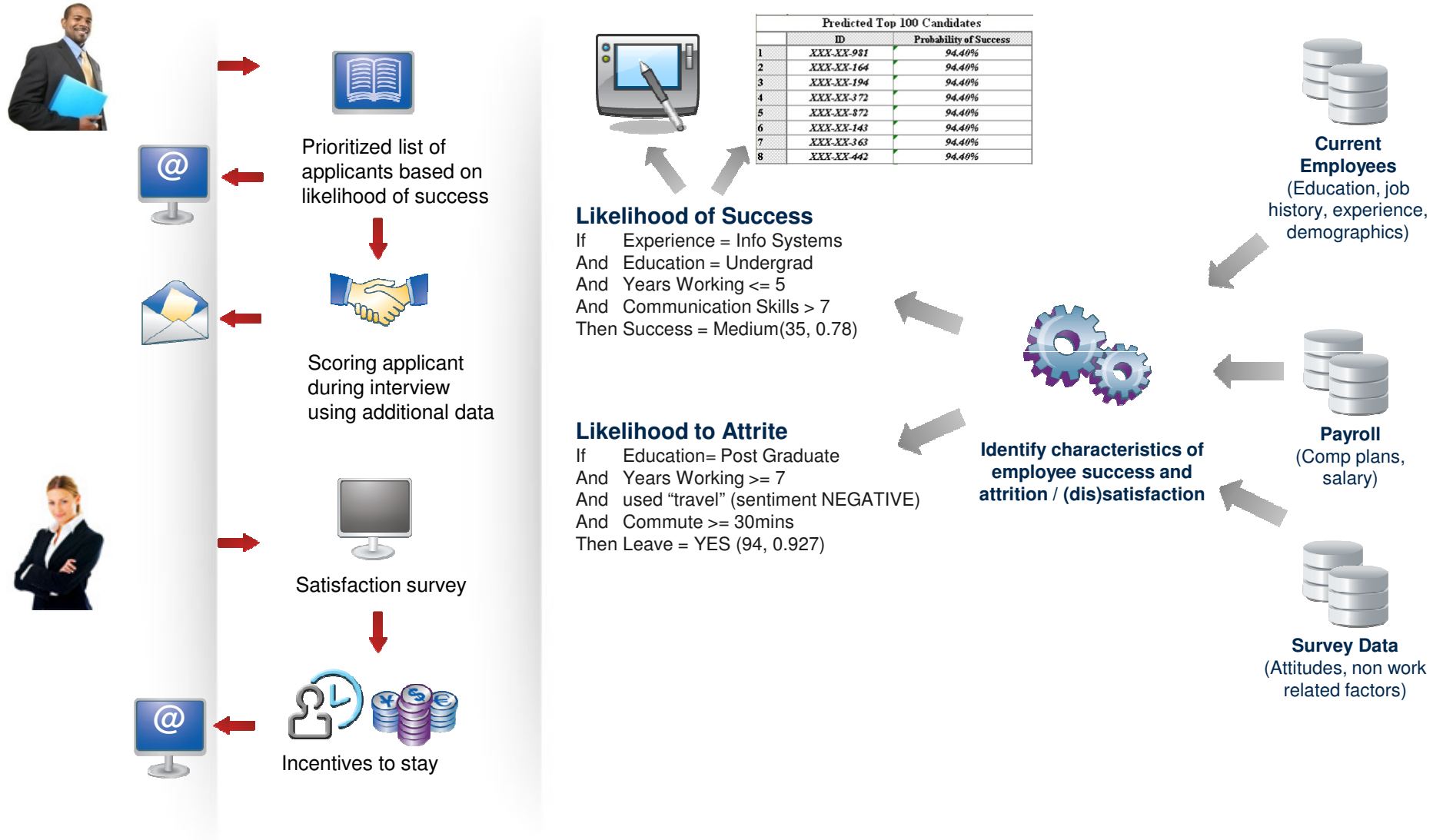
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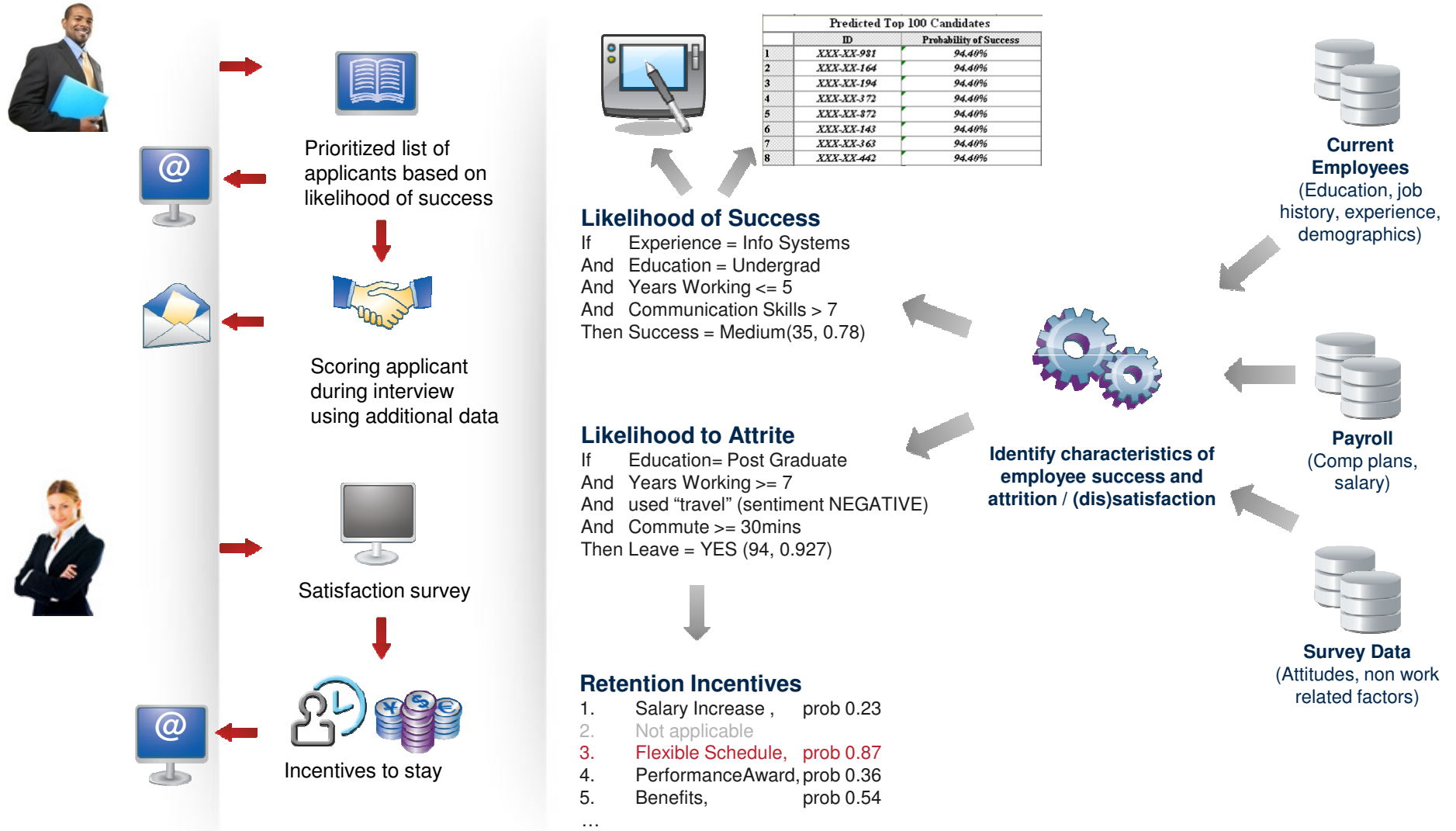
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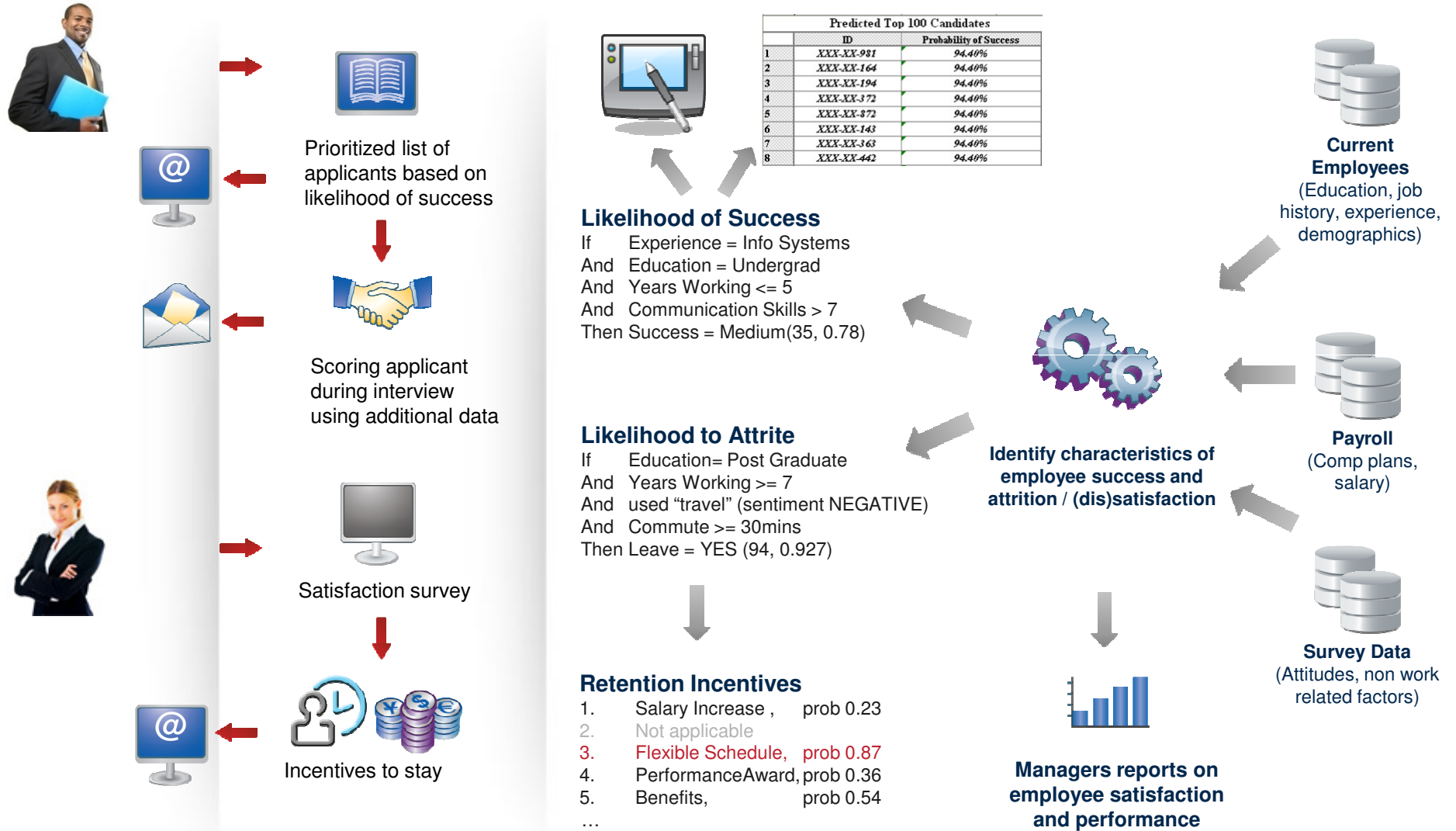
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Organization uses predictive analytics for recruitment and retention efforts



BUSINESS SCENARIO: HUMAN CAPITAL MANAGEMENT

Organization uses predictive analytics for recruitment and retention efforts



Organization uses predictive analytics for recruitment and retention efforts



Prioritized list of applicants based on likelihood of success



Scoring applicant during interview using additional data



Satisfaction survey



Incentives to stay



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7	XXX-XX-363	94.40%
8	XXX-XX-442	94.40%

Likelihood of Success

If Experience = Info Systems
 And Education = Undergrad
 And Years Working <= 5
 And Communication Skills > 7
 Then Success = Medium(35, 0.78)

Likelihood to Attrite

If Education= Post Graduate
 And Years Working >= 7
 And used "travel" (sentiment NEGATIVE)
 And Commute >= 30mins
 Then Leave = YES (94, 0.927)

Retention Incentives

1. Salary Increase , prob 0.23
2. Not applicable
3. Flexible Schedule, prob 0.87
4. Performance Award, prob 0.36
5. Benefits, prob 0.54
- ...



Current Employees
 (Education, job history, experience, demographics)



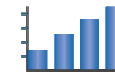
Payroll
 (Comp plans, salary)



Survey Data
 (Attitudes, non work related factors)

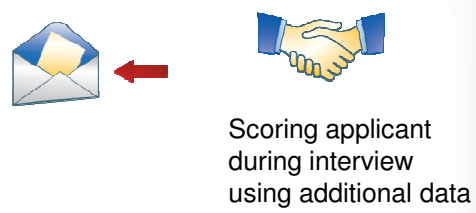
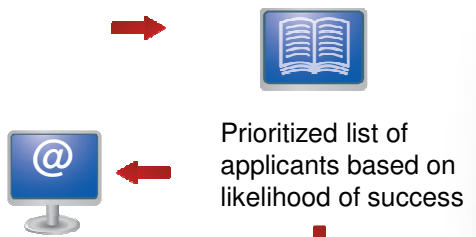


Identify characteristics of employee success and attrition / (dis)satisfaction



Managers reports on employee satisfaction and performance

Capabilities



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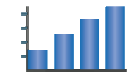
Current Employees
 (Education, job history, experience, demographics)

Payroll
 (Comp plans, salary)

Survey Data
 (Attitudes, non work related factors)

Data Collection

Managers reports on employee satisfaction and performance



Capabilities



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Predictive Modeling

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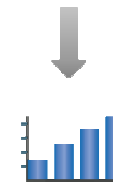


Payroll
 (Comp plans, salary)



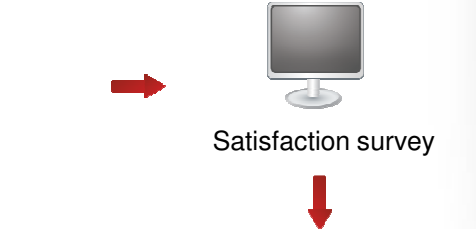
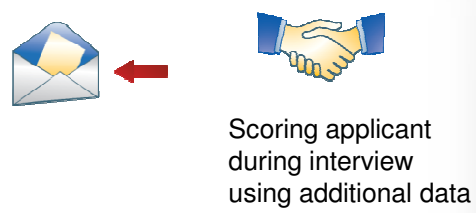
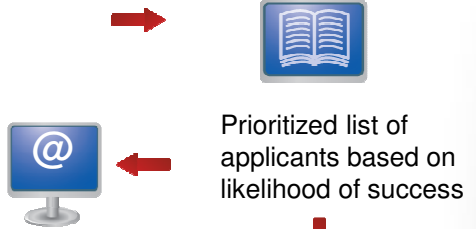
Survey Data
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Identify characteristics of employee success and attrition / (dis)satisfaction



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Identify characteristics of success and satisfaction

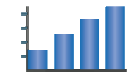
Text Mining

Managers reports on employee satisfaction and performance

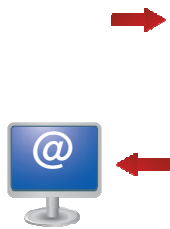
Current Employees
 (Education, job history, experience, demographics)

Payroll
 (Comp plans, salary)

Survey Data
 (Attitudes, non work related factors)



Capabilities



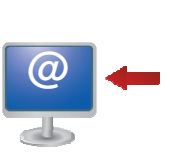
Prioritized list of applicants based on likelihood of success



Scoring applicant during interview using additional data



Satisfaction survey



Incentives to stay



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Batch Scoring

Likelihood of Success

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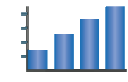
Identify characteristics of employee success and attrition / (dis)satisfaction

Current Employees
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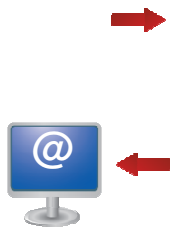
Payroll
 (Comp plans, salary)

Survey Data
 (Attitudes, non work related factors)

Managers reports on employee satisfaction and performance



Capabilities



Prioritized list of applicants based on likelihood of success



Scoring applicant during interview using additional data



Incentives to stay

Satisfaction survey

Real-time Scoring

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Success

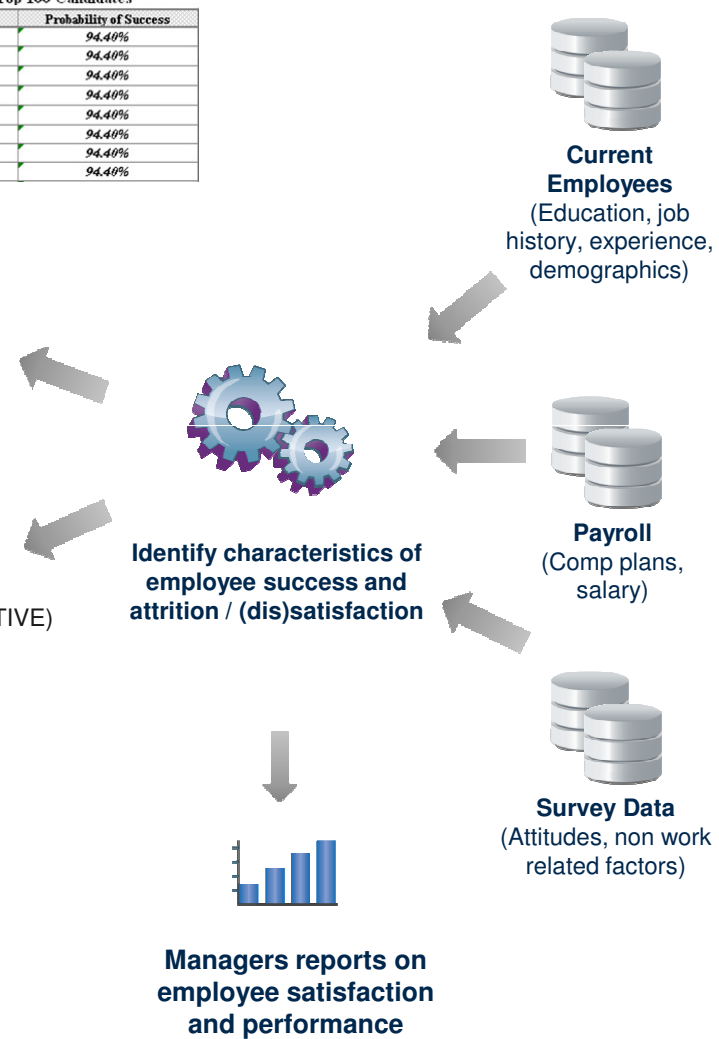
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Retention Incentives

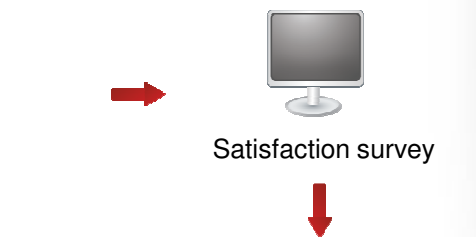
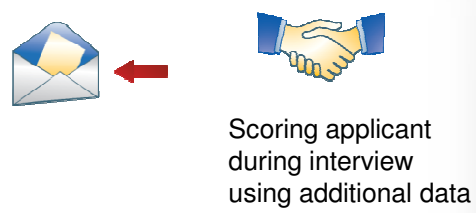
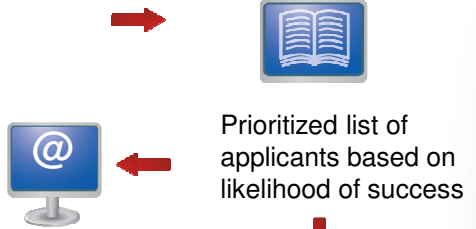
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Managers reports on employee satisfaction and performance

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Decision Optimization

Retention Incentives

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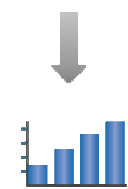
Payroll
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Survey Data
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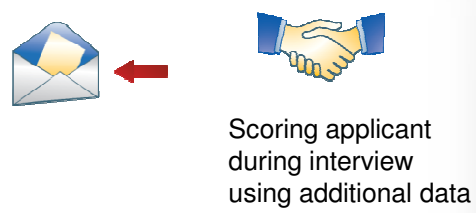
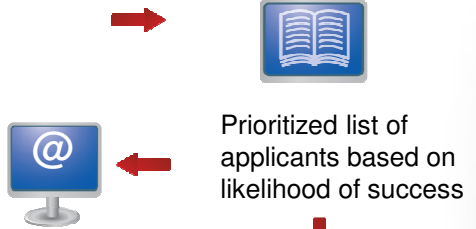


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Managers reports on employee satisfaction and performance

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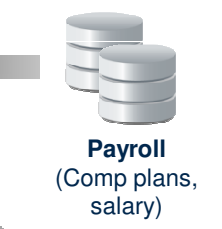
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Retention Incentives

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2. Not applicable
3. Flexible Schedule, pro
4. Performance Award, pro
5. Benefits, pro
- ...

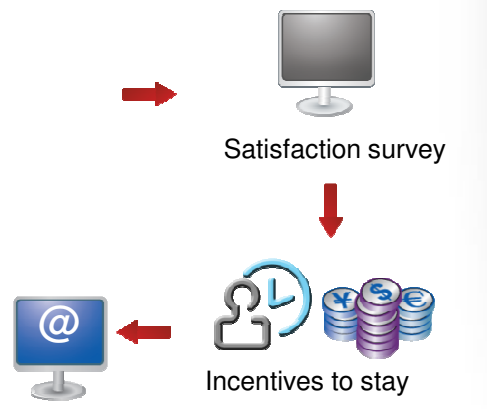
Identify characteristics of employee success and attrition / (dis)satisfaction



Analysis, reporting, KPPs

Managers reports on employee satisfaction and performance

Business Objectives



Attract the right employees



Predicted Top 100 Candidates		
	ID	Probability of Success
1	XXX-XX-981	94.40%
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6	XXX-XX-143	94.40%
7	XXX-XX-363	94.40%
8	XXX-XX-442	94.40%

Likelihood of Success

If Experience = Info Systems
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 And Years Working <= 5
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 Then Success = Medium(35, 0.78)

Current Employees
 (Education, job history, experience, demographics)

Likelihood to Attrite

If Education = Post Graduate
 And Years Working >= 7
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 And Commute >= 30mins
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Identify characteristics of employee success and attrition / (dis)satisfaction

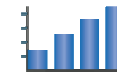
Payroll
 (Comp plans, salary)

Retention Incentives

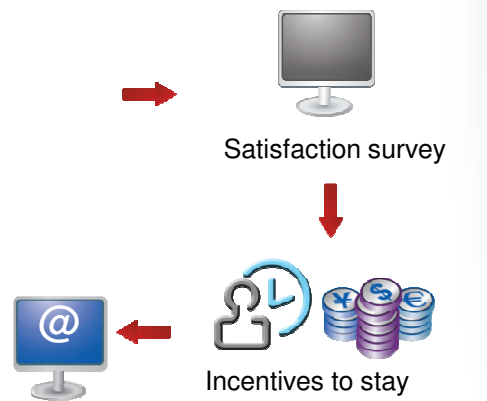
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4. Performance Award, prob 0.36
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Survey Data
 (Attitudes, non work related factors)

Managers reports on employee satisfaction and performance



Business Objectives



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Payroll
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Survey Data
 (Attitudes, non work related factors)

Retention Incentives

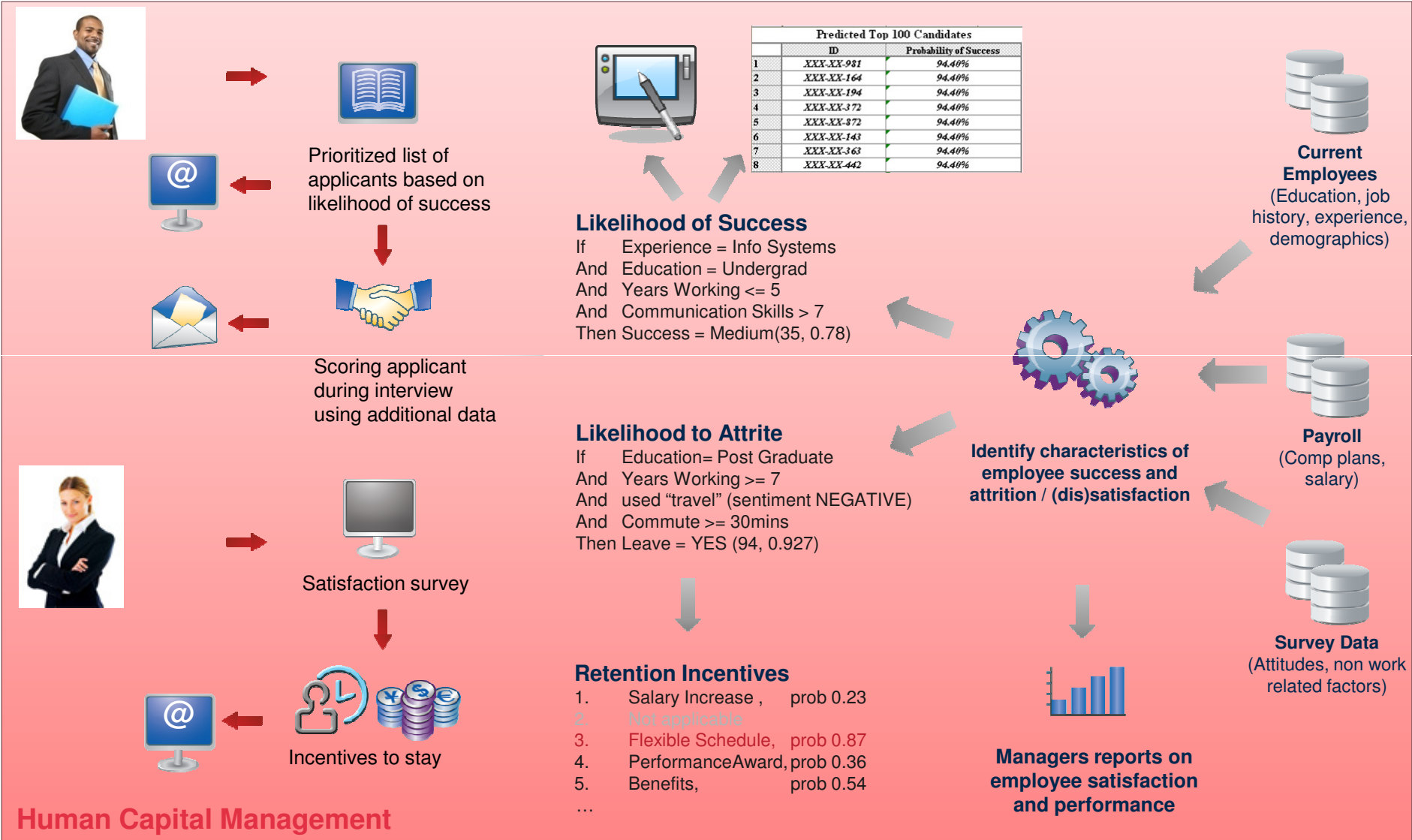
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Managers reports on employee satisfaction and performance

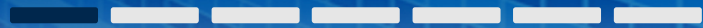


Retain valuable employees

Business Functions



Analytical Process



Current Employees
(Education, job history, experience, demographics)



Payroll
(Comp plans, salary)



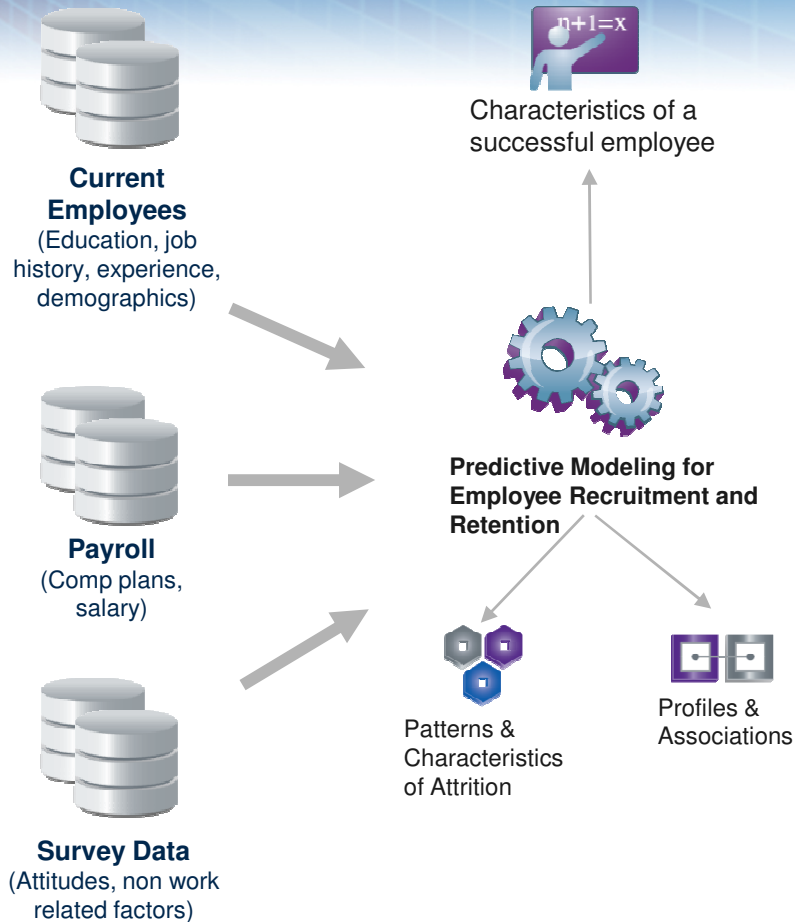
Survey Data
(Attitudes, non work related factors)

Capture →

Predict →

Act

Analytical Process



Capture

Predict

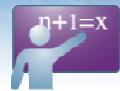
Act

Analytical Process

Current Employees
(Education, job history, experience, demographics)

Payroll
(Comp plans, salary)

Survey Data
(Attitudes, non work related factors)



Characteristics of a successful employee



Predictive Modeling for Employee Recruitment and Retention

Patterns & Characteristics of Attrition



Profiles & Associations

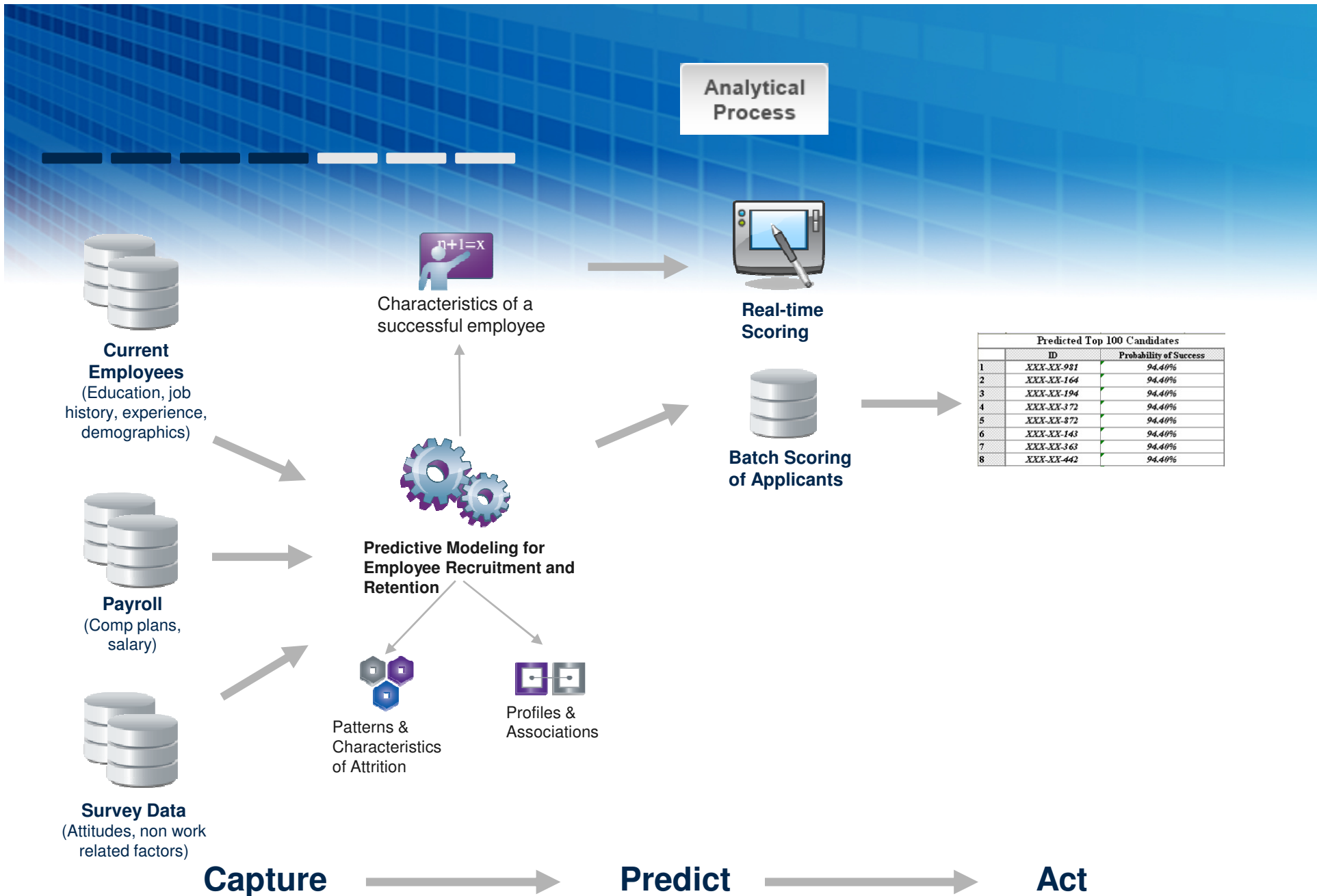
Batch Scoring of Applicants

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Capture

Predict

Act



Analytical Process

Current Employees
(Education, job history, experience, demographics)

Payroll
(Comp plans, salary)

Survey Data
(Attitudes, non work related factors)

$\eta + I = x$
Characteristics of a successful employee

Predictive Modeling for Employee Recruitment and Retention

Patterns & Characteristics of Attrition

Profiles & Associations

Real-time Scoring

Batch Scoring of Applicants

Likely to attrite?

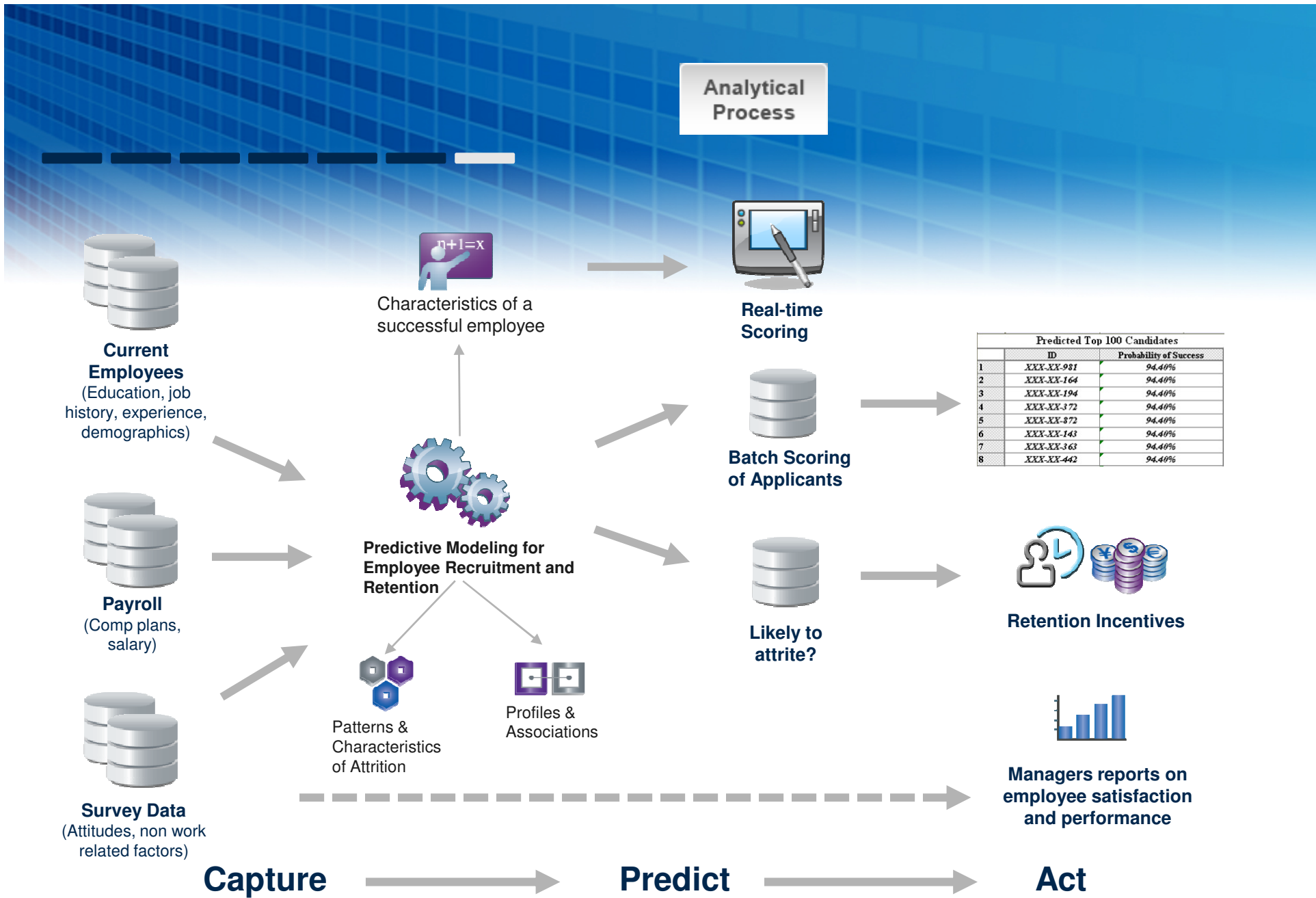
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Retention Incentives

Capture

Predict

Act



Analytical Process

Current Employees
(Education, job history, experience, demographics)

Payroll
(Comp plans, salary)

Survey Data
(Attitudes, non work related factors)

$n+1=x$
Characteristics of a successful employee

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Retention Incentives

Managers reports on employee satisfaction and performance

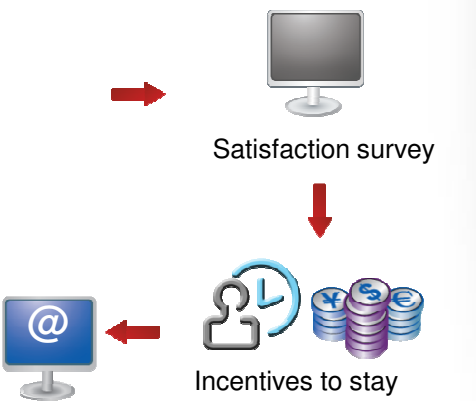
Capture

Predict

Act



Scoring applicant during interview using additional data



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Identify characteristics of employee success and attrition / (dis)satisfaction

Descriptive



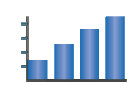
Current Employees
 (Education, job history, experience, demographics)



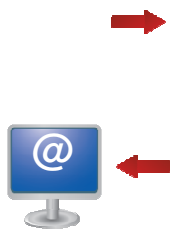
Payroll
 (Comp plans, salary)



Survey Data
 (Attitudes, non work related factors)



Managers reports on employee satisfaction and performance



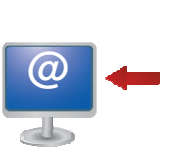
Prioritized list of applicants based on likelihood of success



Scoring applicant during interview using additional data



Satisfaction survey



Incentives to stay



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Current Employees
 (Education, job history, experience, demographics)



Payroll
 (Comp plans, salary)

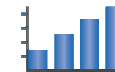


Survey Data
 (Attitudes, non work related factors)

Attitudes



Identify characteristics of employee success and attrition / (dis)satisfaction



Managers reports on employee satisfaction and performance



Satisfaction survey

**Step 1:
Web-based Data Collection
process for conducting employee
satisfaction surveys.**



Survey Data
(Attitudes, non work related factors)

Step 2: Analysis to understand characteristics of a successful employee and employee attrition / (dis)satisfaction.

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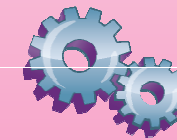

Current Employees
(Education, job history, experience, demographics)

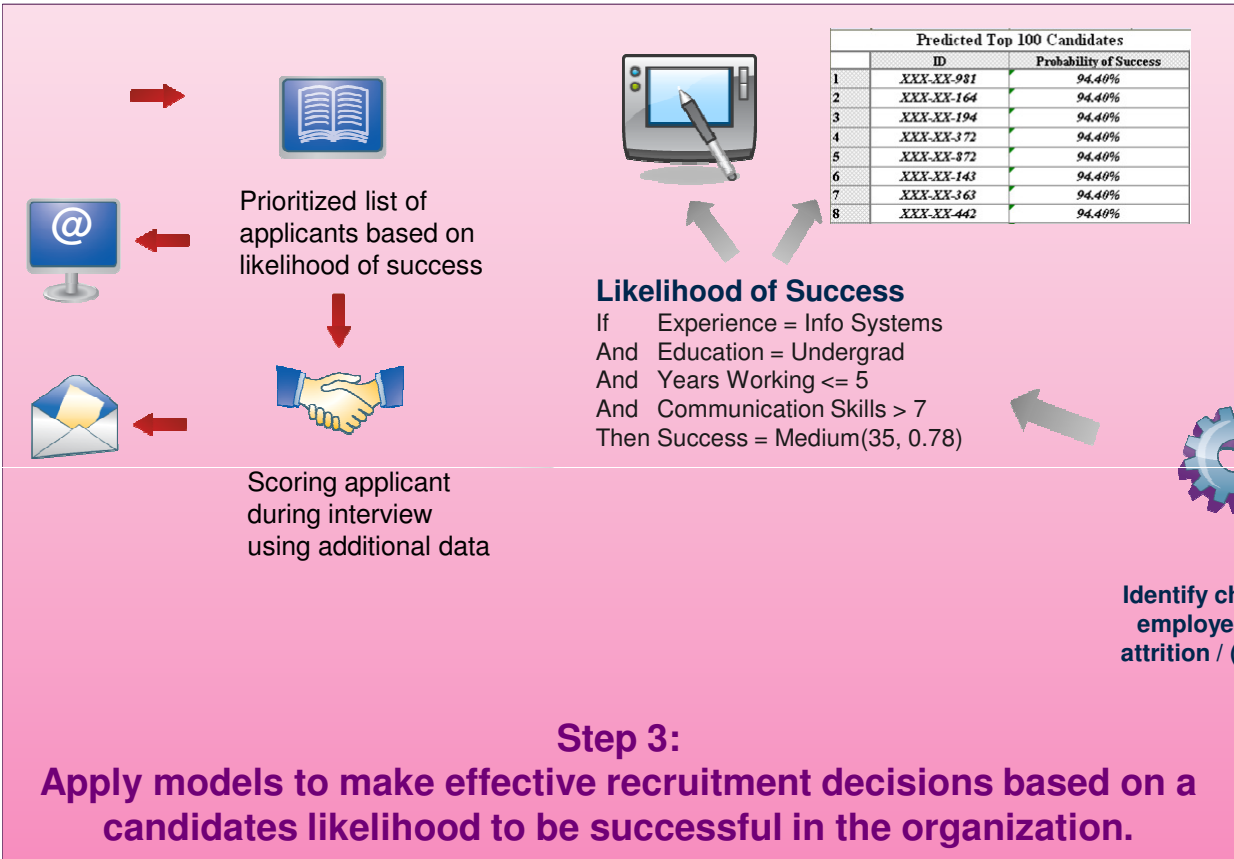

Payroll
(Comp plans, salary)


Survey Data
(Attitudes, non work related factors)



Satisfaction survey





Current Employees
 (Education, job history, experience, demographics)

Payroll
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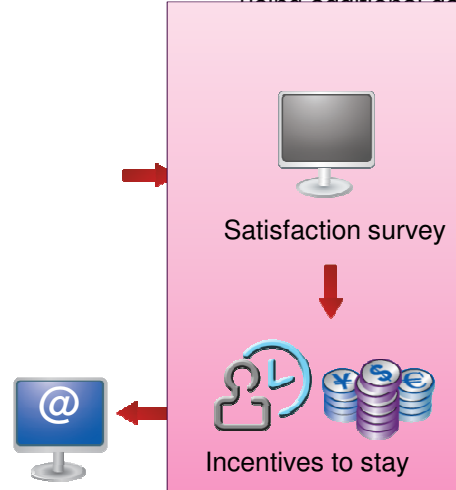
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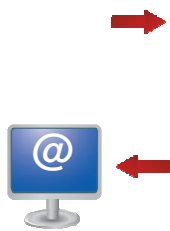
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Step 4: Proactively identify employees likely to attrite and optimal incentives that will motivate them to stay as well as increase employee satisfaction.



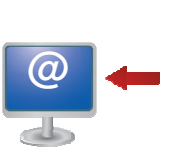
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Scoring applicant during interview using additional data



Satisfaction survey



Incentives to stay



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Retention Incentives

1. Salary Increase
2. Not applicable
3. Flexible Schedule
4. Performance Bonus
5. Benefits, Health Insurance
- ...



Identify characteristics of employee success and attrition / (dis)satisfaction



Current Employees
 (Education, job history, experience, demographics)



Payroll
 (Comp plans, salary)



Survey Data
 (Attitudes, non work related factors)

Step 5: Create employee performance and management reports

Retention Incentives

1. Salary Increase
2. Not applicable
3. Flexible Schedule
4. Performance Bonus
5. Benefits, Health Insurance
- ...

Managers reports on employee satisfaction and performance

Summary

- Organizations are looking for Human Resources to:
 - Add value strategically
 - Be more proactive
 - Use fact-based decision-making
- Predictive analytics provides a way to:
 - Tap into a wealth of data, regardless of system
 - Augment operational data with employee attitudes and opinions
 - Apply techniques that uncover factors and inter-relationship between factors that drive business outcomes



Questions?

THANK YOU!