

Fare Collection 101: System Planning

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2012 FARE COLLECTION WORKSHOP

System Planning

You want a new fare collection system for your transit agency
- WHY?!?

1. There will soon be mobile apps to buy everything except the Mona Lisa and a \$2 ride on your buses.
2. Your boss, the Executive Director, wants the really cool stuff his buddy just got at another agency.
3. Your transit agency still has \$200 million in Stimulus Funding to spend before November.

System Planning

To Build A Business Case for a New Fare Collection System:

Follow an Objective Planning Approach

That Results in a Justifiable Recommendation

Supported by Management & Stakeholders

System Planning

What have you got?



What works, what doesn't?



Examine Existing Fare Policy & Collection

What do you want to achieve?



What is important to you?



Identify Agency Objectives & Priorities

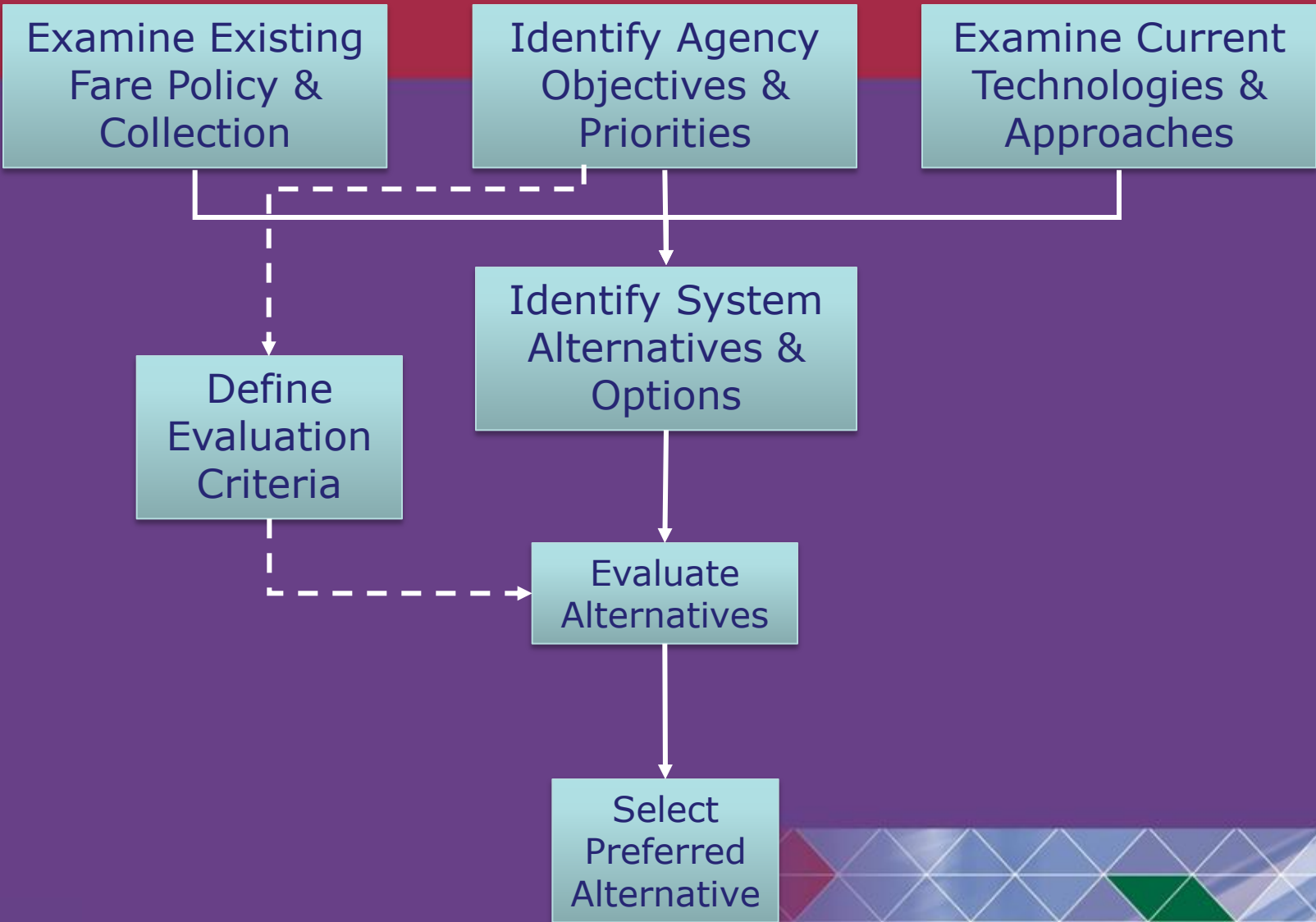
What can help you get there?

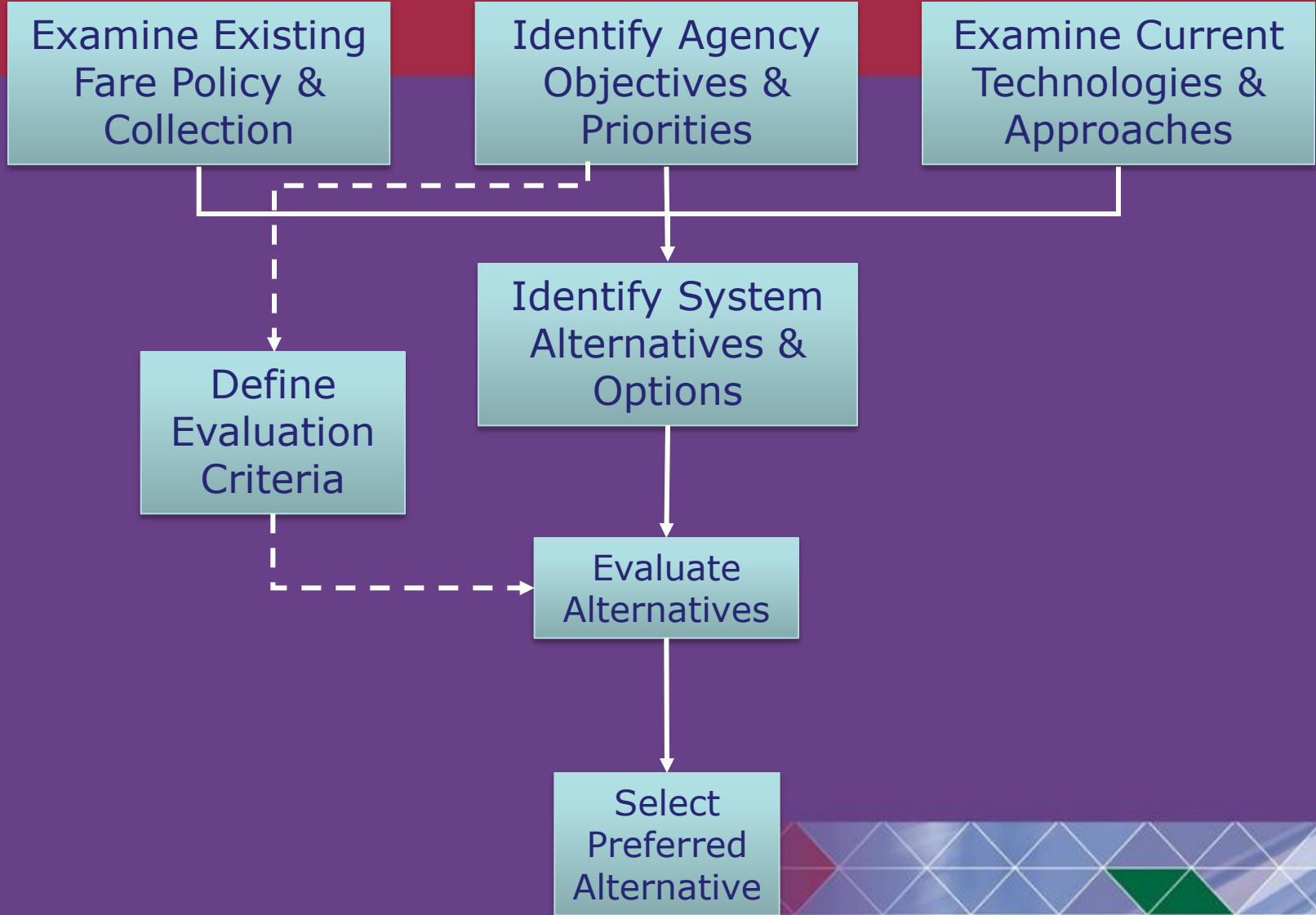


What is out there; does it work?



Examine Current Technologies & Approaches





Examine Existing Fare Policy & Collection

Examining Your System

Equipment Condition

Functionality
Reliability & Maintainability
Refurbish? Modify? Replace? Retire?

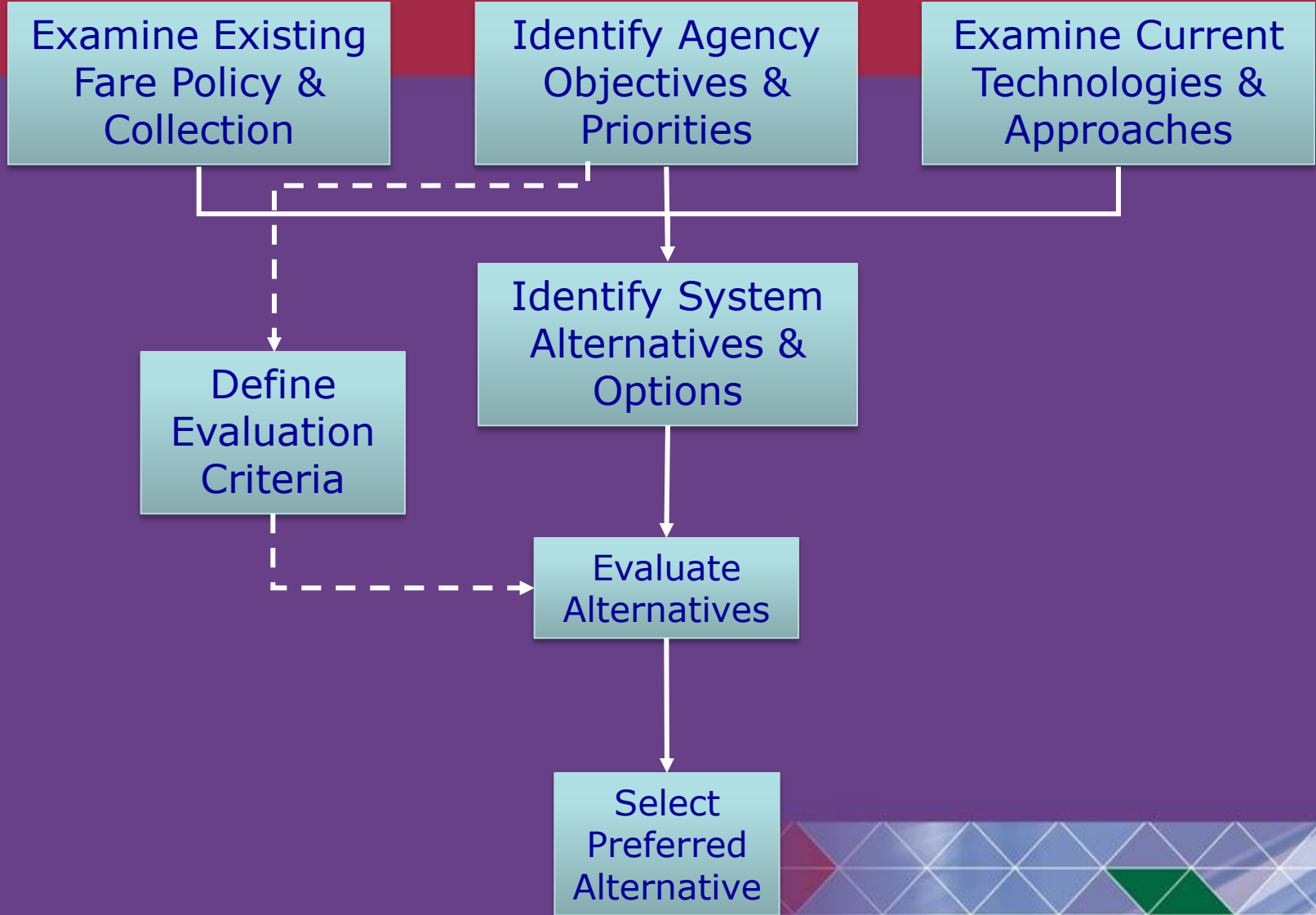
Fare Policy / Payment Methods

On-Board, Off-Vehicle, Off-Site, Online
1-Ride, Multi-Ride, Passes, Transfers

Annual O&M Costs

Rider Characteristics

Frequency: Commuter, Occasional
Fare Product: Single-ride, Day-Pass, Monthly
Payment: Cash, Credit/Debit, Voucher
Demographics: Banked, Unbanked



Identify Agency Objectives & Priorities

Objectives to Consider; Establish Priorities

Increase Revenue

Generate more revenue

Remove payment barriers
Enable fare flexibility
Facilitate partners/sponsors

Collect the correct fare

Minimize instances of:
-unpaid fares; wrong fare
- misused/altered fare media

Decrease revenue theft

Improve process oversight
Secure revenue & media

Increase Ridership

Decrease Costs

Identify Agency Objectives & Priorities

Objectives to Consider; Establish Priorities

Increase Revenue

Increase Ridership

Improve service value

Fares reflect service value

Improve service quality

Speed boarding times
Special event surges
Better rider data

Improve ease-of-use

Simplify purchase, payment
Adopt new payment methods
Inform the customer

Open new markets

Regional/Interagency fares
Employer benefits programs
Partnerships: universities, etc

Decrease Costs

Identify Agency Objectives & Priorities

Objectives to Consider; Establish Priorities

Increase Revenue

Increase Ridership

Decrease Costs

Reduce annual costs

- cost of fare collection
 - in-house process improvements
 - outsource potential
- indirect costs
 - reduced dwell times
 - electronic data collection

Maximize benefits of limited capital funds

Identify Agency Objectives & Priorities

Talk to Key People to Identify Priorities

Stakeholder Interviews

Revenue;
Maintenance;
Planning;
Marketing;
Engineering;
Executive Mgmt

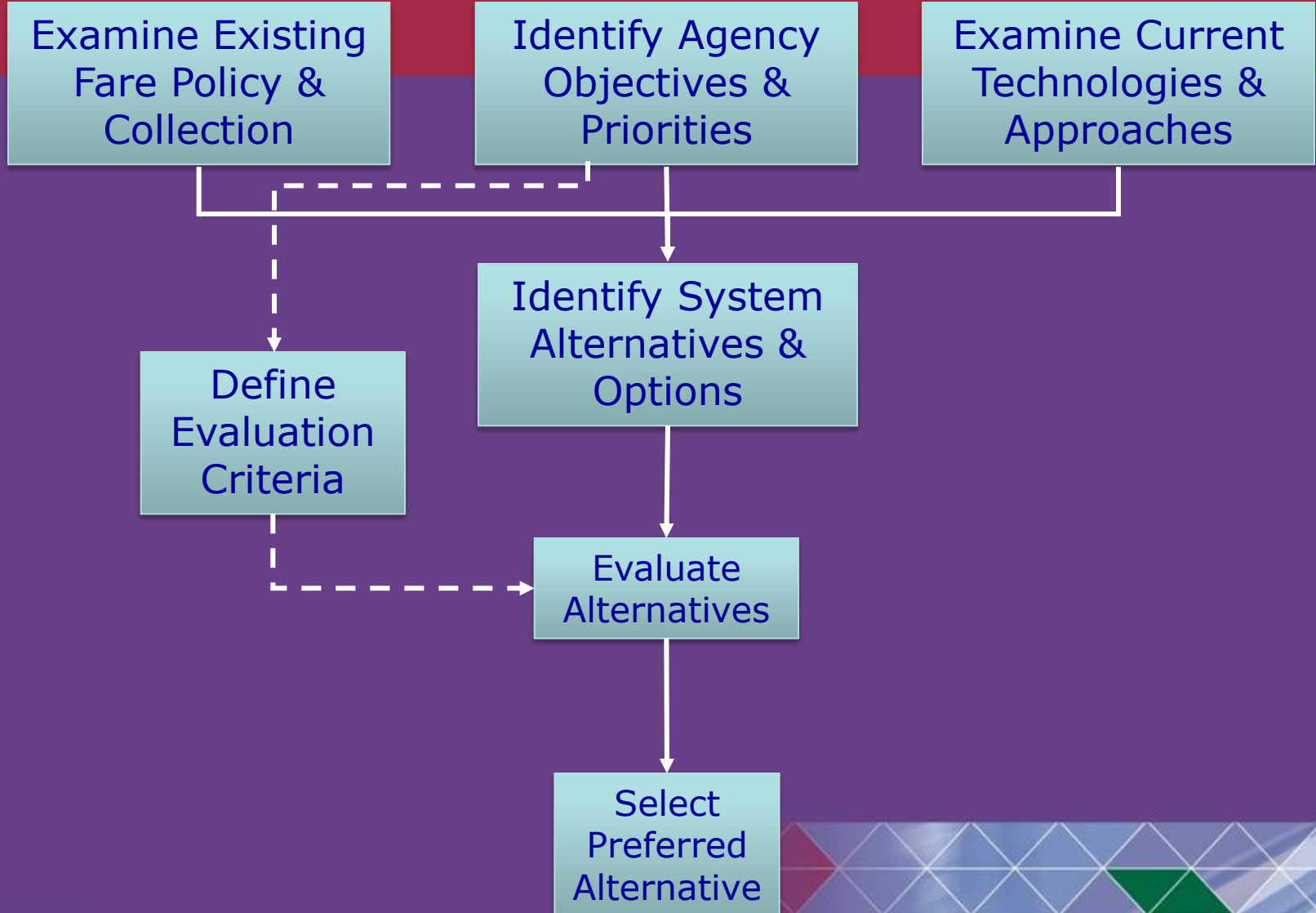
Transportation;
Finance/Accounting;
Customer Service;
Information Systems
Security

Focus Groups

Operating Personnel

Riders: Regular; Occasional

Partners: Universities, schools, employers



Examine Current Technologies & Approaches

Understanding Technology & Lessons Learned

Technology: proven; emerging

Peer agency application: lessons learned

Standards: existing & pending

Examine Current Technologies & Approaches

Elements of Technology and Application

Fare media

Printed tickets & passes

Magnetic fare cards

Read-only
Read / encode / (print)

Contactless smart card
- Agency-issued

Card-based (encode card)
Account-based (centralized)

3rd Party Contactless

Bank cards
Pre-paid cards
Gov't/Employer/Student IDs
Mobile phones: QR, NFC
Form factors: fobs, watches

Fare product sales

Fare payment

Equipment technology

Examine Current Technologies & Approaches

Elements of Technology and Application

Fare media

Fare product sales

On-site

Onboard: Driver; Farebox
In-station: TVMs

Pre-pay

Agency: TVMs, Customer Service
3rd Party: Merchant, Employer, Institution
Direct: Online, Subscription/Autoload,
Mobile Phone

Fare payment

System technology

Examine Current Technologies & Approaches

Elements of Technology and Application

Fare media

Fare product sales

Fare payment

On-Board — Driver monitored: Farebox, Validator

Off-Board — Agent monitored: Farebox, Validator
Barrier controlled: Faregates

Proof-of-Payment — Random inspection: Visual,
Handheld Readers

System technology

Examine Current Technologies & Approaches

Elements of Technology and Application

Fare media

Fare product sales

Fare payment

System technology

Card-based

Fare processed on-site, recorded on card
Nightly central system updates

Account-based

Fare processed by central system in real-time; Read-only cards
Robust data network

Open payments

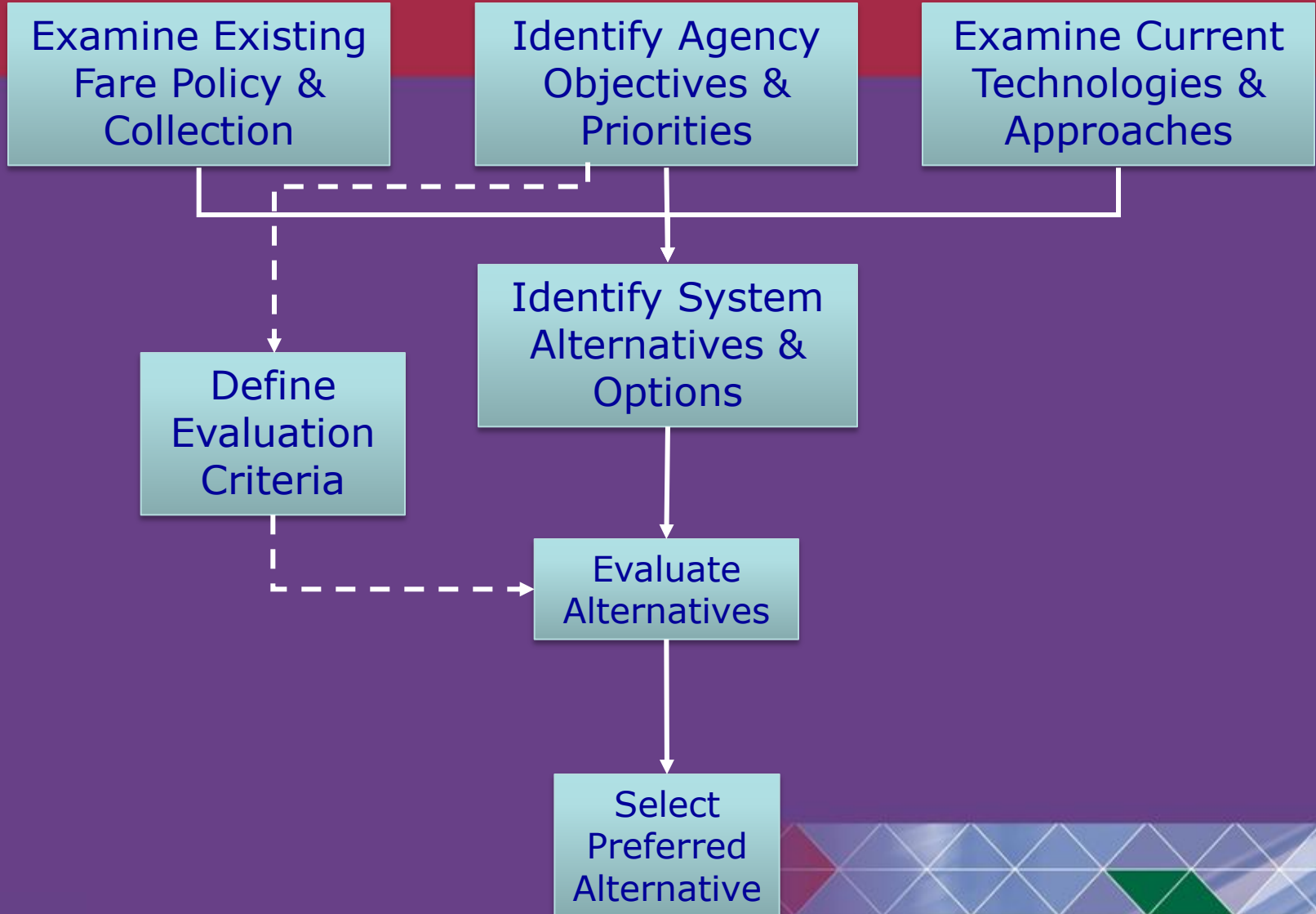
Payment using agency- & 3rd-party media; outsourced processing

Open source

Non-proprietary: can use equipment from multiple suppliers

Standards

Media, Equipment, Communications, Accessibility, Payment card security



Identify System Alternatives & Options

Key Factors Influencing Alternatives

Fare structure

Flat; zoned; mileage-based
Service-based: local, express

Fare products

Single ride; transfer;
Period pass; stored-value

Ridership characteristics

Trip frequency; service type
Adult-senior-student
Pass-ticket-cash

Customer demographics

Credit card, check, voucher, cash
Banked / Unbanked / Underbanked

Agency culture

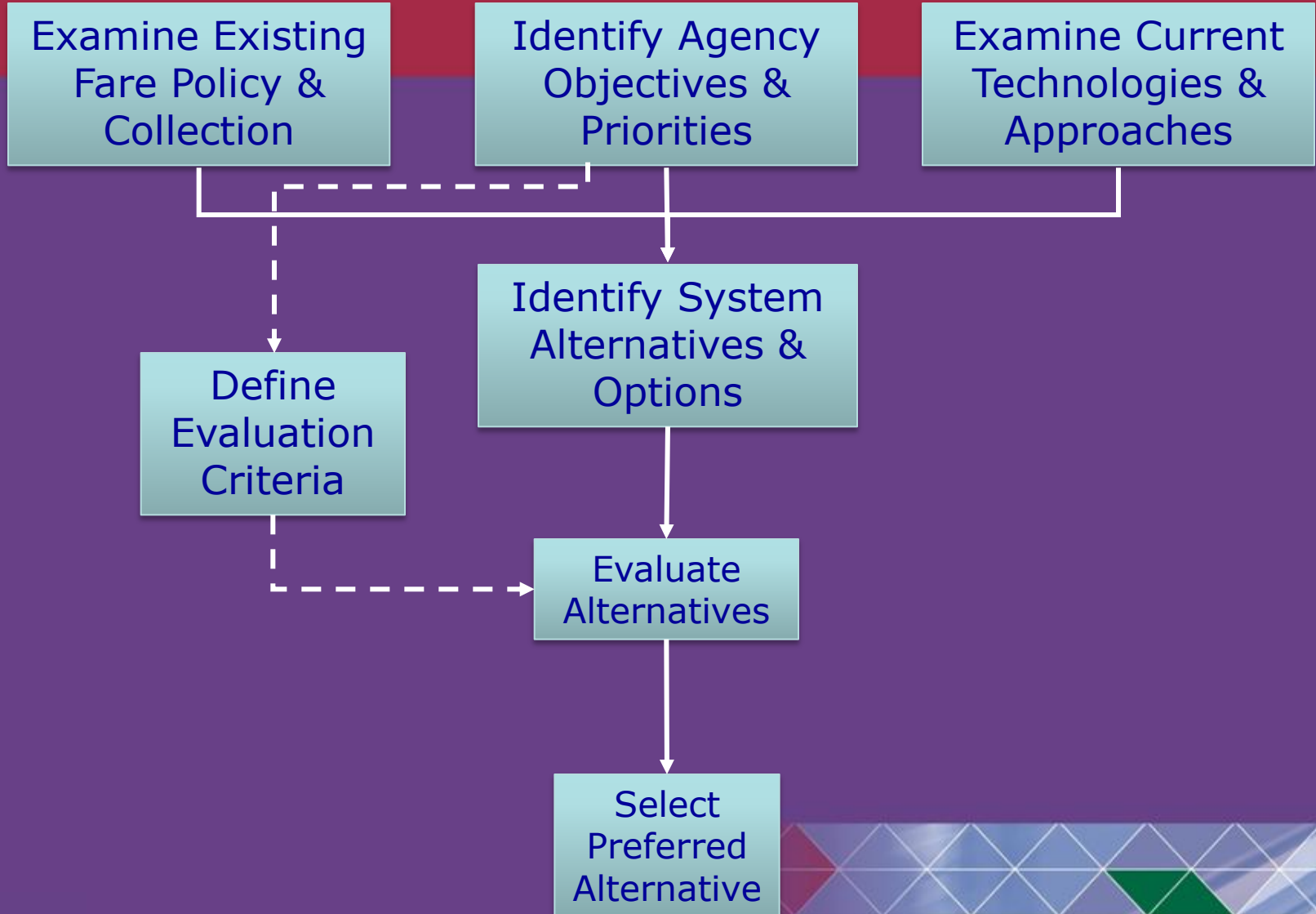
In-house vs. outsource
Risk acceptance

Infrastructure

Surface transit;
Open or enclosed stations
Broadband wired & wireless network

Systems integration

On-board; in-station;
back-office; regional



Evaluate Alternatives

Base Your Criteria on Your Objectives

Capital Costs	Initial investment
O&M Costs	On-going costs
Fare Flexibility	Introduce and revise fares
Fare Enforcement	Deter evasion; Collect the right fare
Service Quality	Speed the trip
Revenue Security	Protect revenue in all phases
Convenience	Ease of use and administration
Data Quality	Rider travel and preferences
Versatility	System longevity and future growth

Evaluate Alternatives

Systems Operating Costs

Operations

In-station or dedicated on-board fare collection

Maintenance

Field; component; inventory

Fare media

Stock inventory, sales/refunds; transit benefits; distribution/control

Revenue processing

Cash revenue collection & processing
Sales & payment transaction charges
Financial settlement & reconciliation

Customer service

Account management;
Call center; Walk-in; Web-based

Fare inspection

Inspection; processing/tracking;
adjudication

Information systems;
Data network

Software & network maint/admin
Software licenses; End-user support

Evaluate Alternatives

Systems Capital Costs

System Development & Design

- Staff project support/mgt
- Professional services
- System requirements;
- Spec preparation

Procurement Management

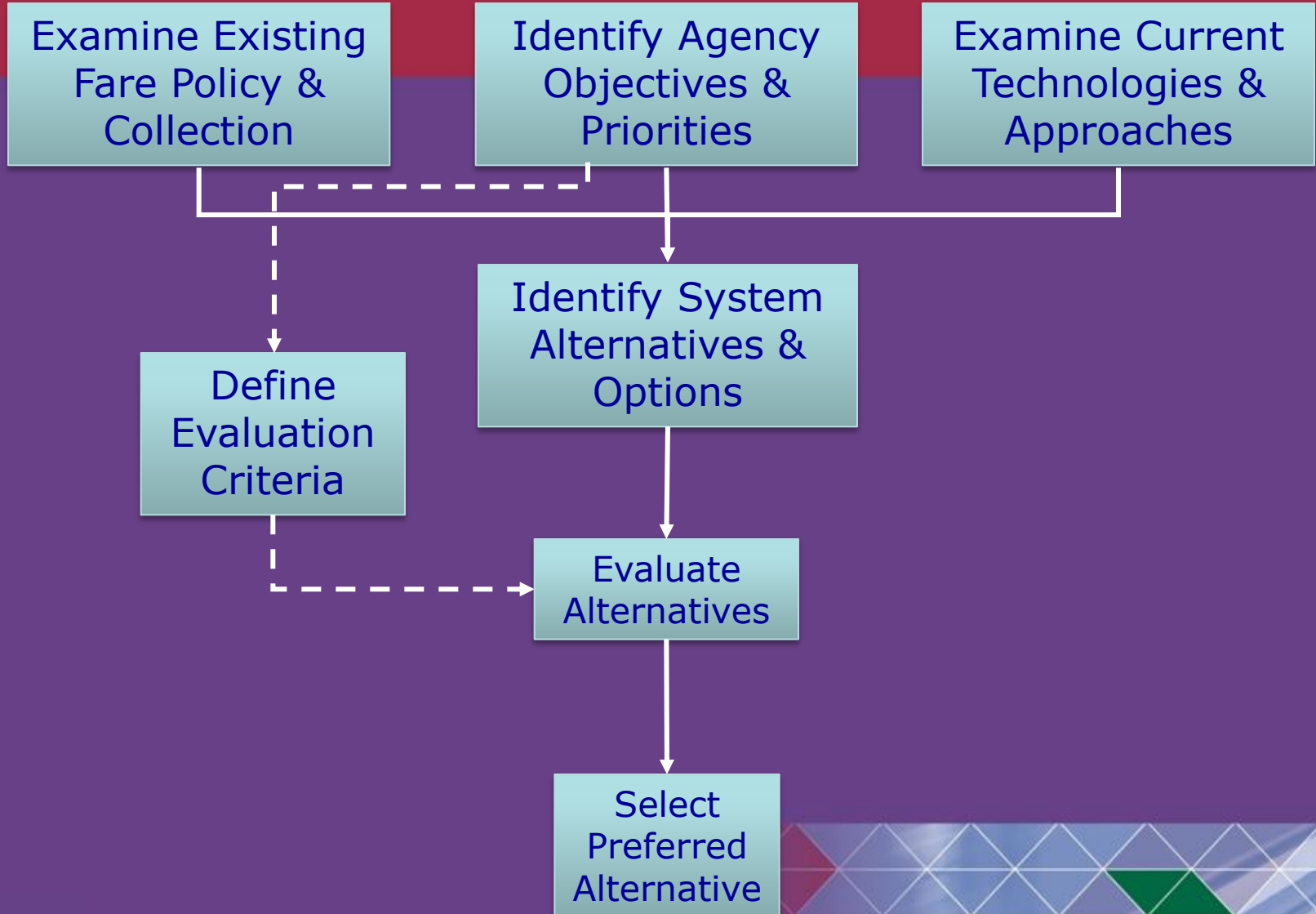
- Solicitation / evaluation / selection;
- Project management;
- Design review; Systems interfaces

Procurement Contractor

- Equipment; Media; Software;
- Engineering; Project mgt.;
- Installation & testing;
- Documentation; Training program, Warranty

Implementation

- Infrastructure upgrade;
- Site preparation
- Recruitment; (re)training;
- procedures; public education;
- transition plan



Select Preferred Alternative

Consider all objectives; give greater weight to priorities

Communicate: Be open about the selection process

Be open about the process: maintain support

Have an executive-level champion for the project

After Selection:

Identify and Address Key Decisions: Business Rules

Implementation Plan and Schedule

References

For further information:

Transit Cooperative Research Program (Transportation Research Board)
[TCRP Report #94: Fare Policies, Structures and Technologies: Update](#), Washington, DC (2003)

American Public Transportation Association
[Automatic Fare Collection System Planning and Implementation Guidelines](#), Washington, DC (2006)

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