

Society of Infrastructure Maintenance Engineering

Growing Prospect of Asset Management

[Hypothetical]

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By

Yuji Nakamura

Integrated Solution Services (ISS)

The Points of Today's Issues

Asset Management

Maintenance (Property Mgmt)

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= Optional Operation + Maintenance

Value of Infrastructure

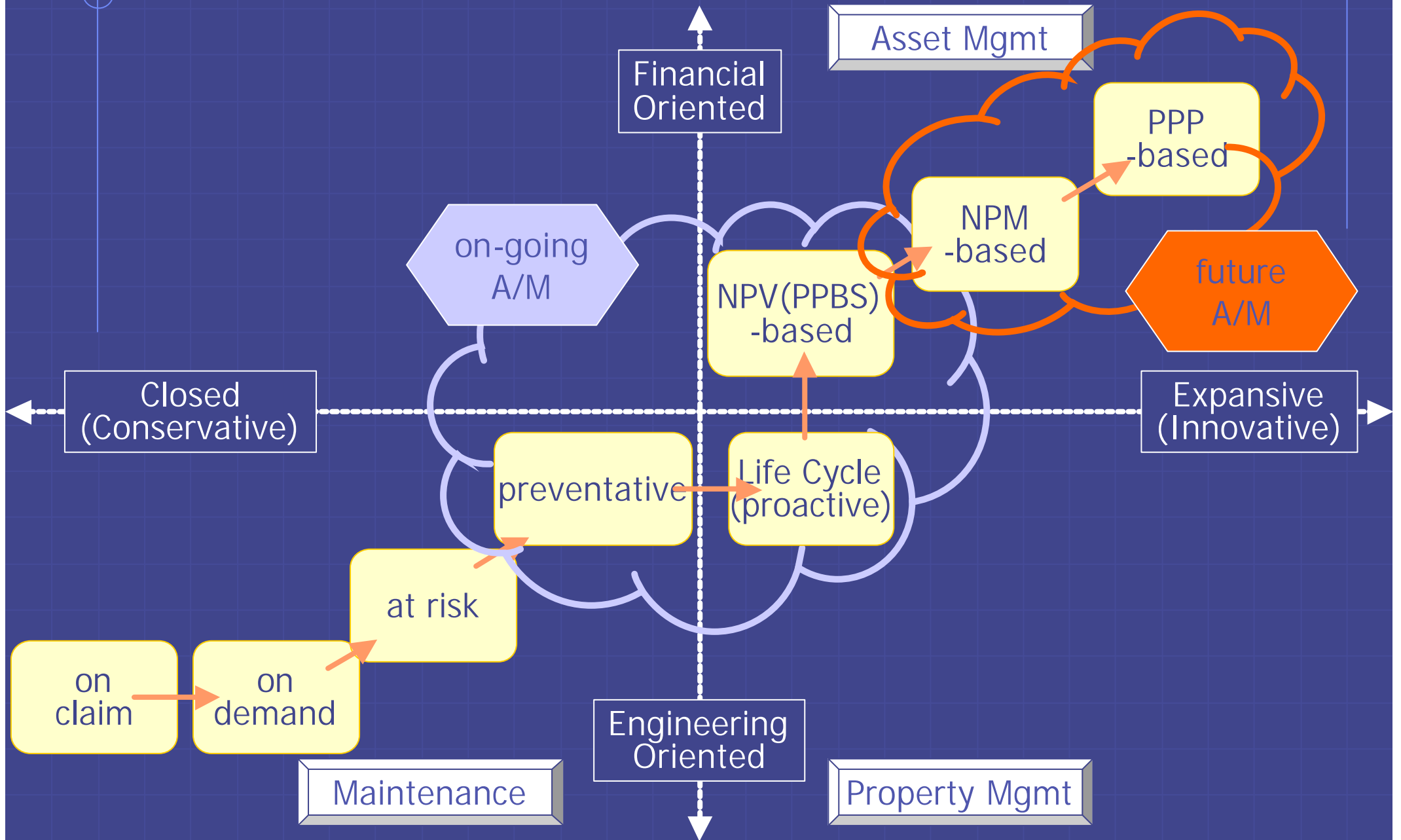
Advanced Scheme of Asset Management

[Supplement] Property Management (Maintenance)

(1) Objectives of Assessment by Inspection

(2) Evaluation of Structure's Value

Growing Prospect of Asset Mgmt



Hierarchy of Asset Mgmt

	Project Programming	Management Means & Methods	Major Technology
Property Mgmt	Preventative Maintenance	<ul style="list-style-type: none">• Proactive remedy• Life cycle cost analysis	Civil Engineering
Asset Mgmt	Options Operation	<ul style="list-style-type: none">• Disposal• Income Improvement• Advanced (Upgraded) Usage• Conversion• Replacement• demolition	Financial Engineering
Fund Mgmt	National or Regional Policy	<ul style="list-style-type: none">• Fund allocation• Committed long-term activities• Social demands	Economics Politics

P/M vs A/M

	Property Mgmt	Asset Mgmt
Project	Maintenance	Options Operation
Criteria	Deterioration	Valuation
Evaluation	Safety & Condition	Increased or added value
Aim	Budgetary outlook	Cashflow
Goals	<ul style="list-style-type: none">•Deductible expenditures•Extension of whole life•Improvement of serviceability	<ul style="list-style-type: none">•Upgraded asset value•Deductible operation costs•Variety of funds provision

Value of Infrastructure

Category	Division	Contents
Stock Value	Disposal by sale	Net present price as real property
	Demolition	Expenditures to be ceased in future
Income Value	Expected Income	Net present value of future cashflow by improved operation
	Advanced Usage	Net present value of future cashflow by advanced usage
	Conversion	Net present value of future cashflow by conversion
Tax Value	User's Benefit	Tax increase due to direct effects
	Spreading Benefit	Tax increase due to interactive economical influence
Social Value	Social Benefit	Benefits outside economy

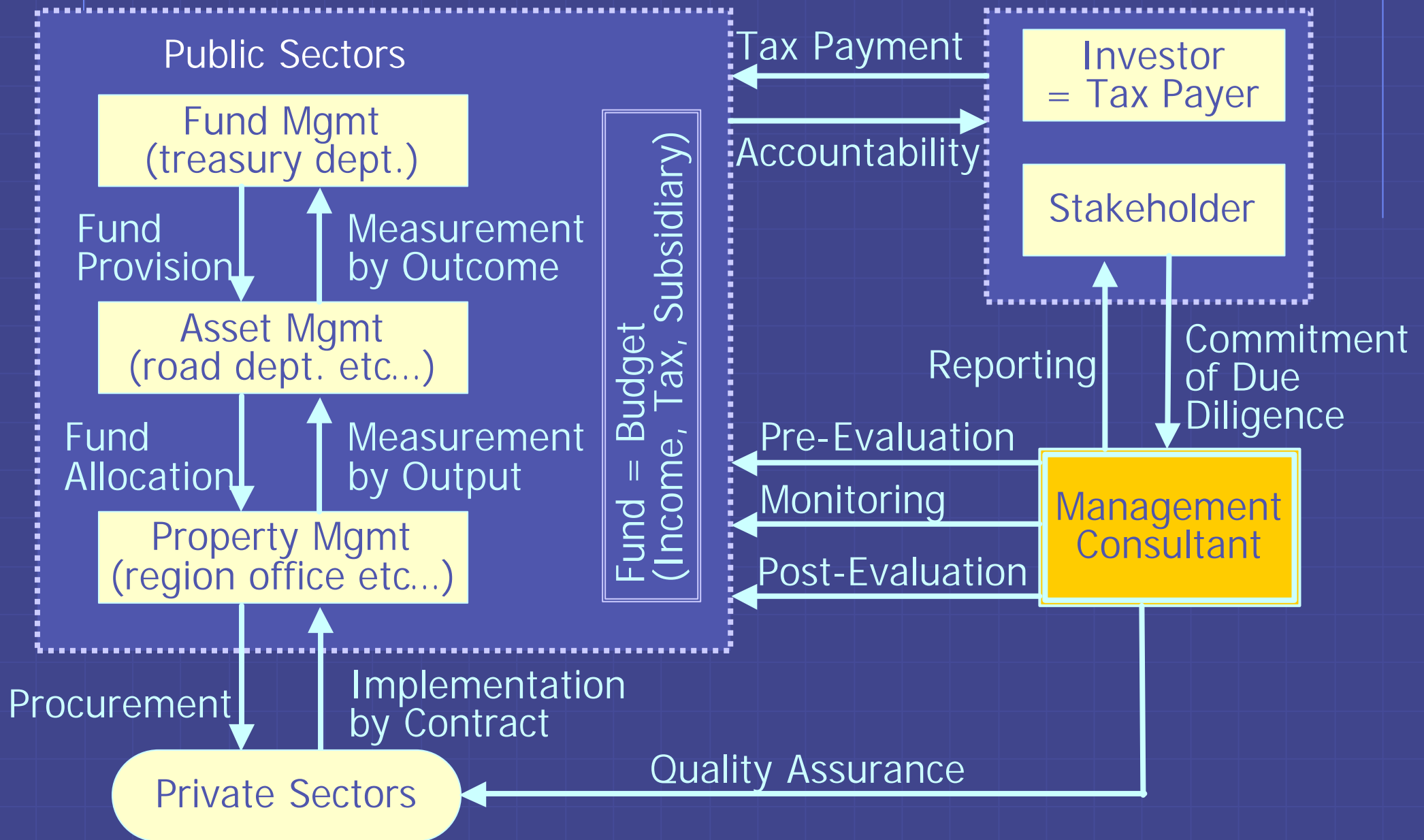
Estimate of Infrastructure Values

	Category	Methods of Estimate	Evaluation
Tangible	Stock Value	Market value	Sale price Ceased expenditures
	Income Value	Financial engineering like DCF	NPV
	Tax Value	Tax allocation by certain standards	Increased tax
Intangible	Social Value	Policy or Effectiveness	Effective or Ineffective

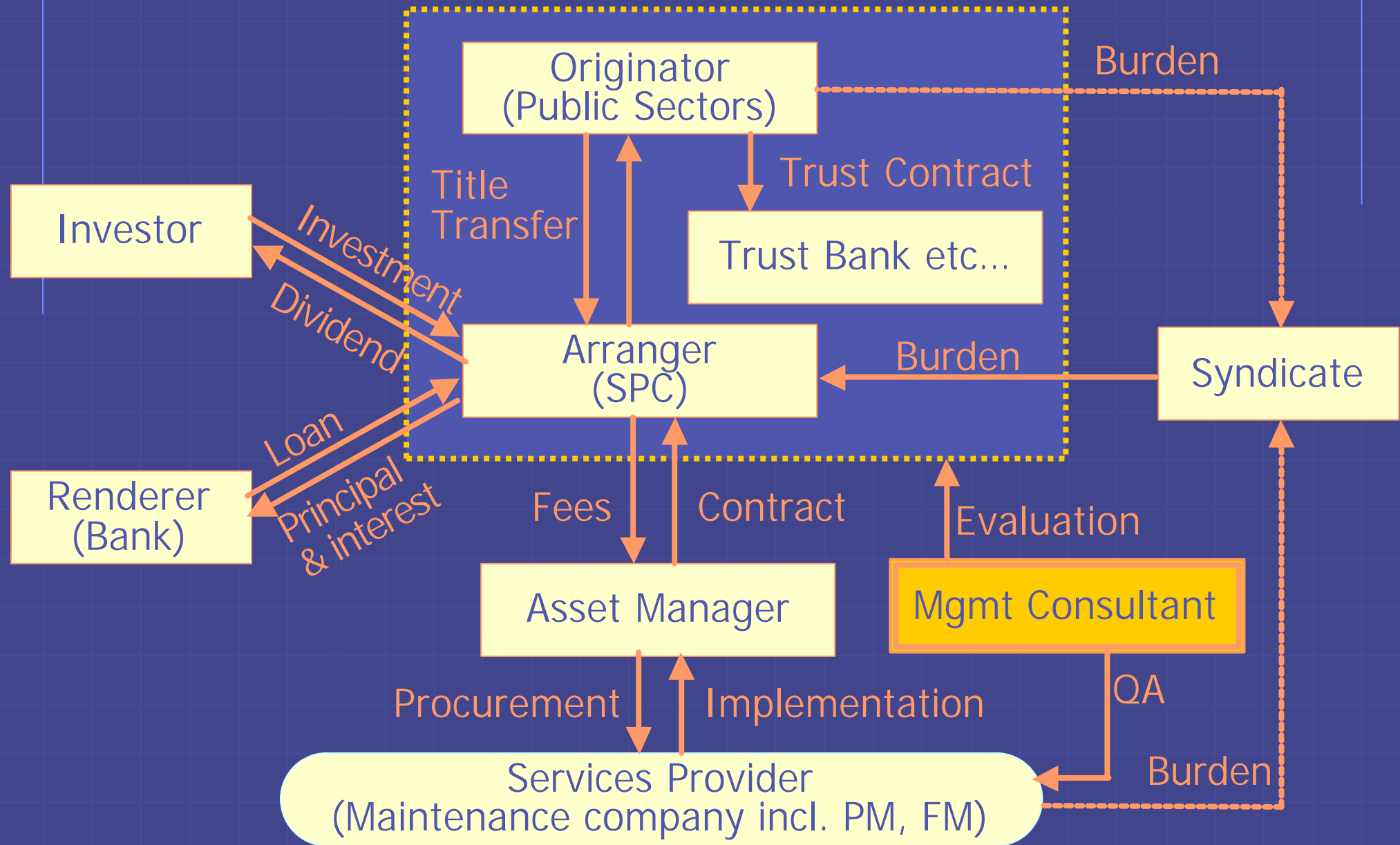
Potential Options of Values

		Area Type						Network Type					
		Government Office Bldg	Museum, Hall,...	Park, square, plaza, ...	Temple, Shrine	Garbage Disposal Plant	Port, Airport	National & Municipal Road	Toll Road	Railway	Water Supply & Sewage	Power Supply & Energy	Embankment
Stock	Disposal												
	Demolition												
Income	Upgraded income	-		-		()		-					-
	Advanced Usage									()	()		-
	Conversion				-	-	-	-	-	-	-	-	-
Tax	User's Benefit	-		-		-				-	-	-	-
	Spreading Benefit	-		-		-				-	-	-	-
Social	Social Benegit		-					-	-	-	-	-	

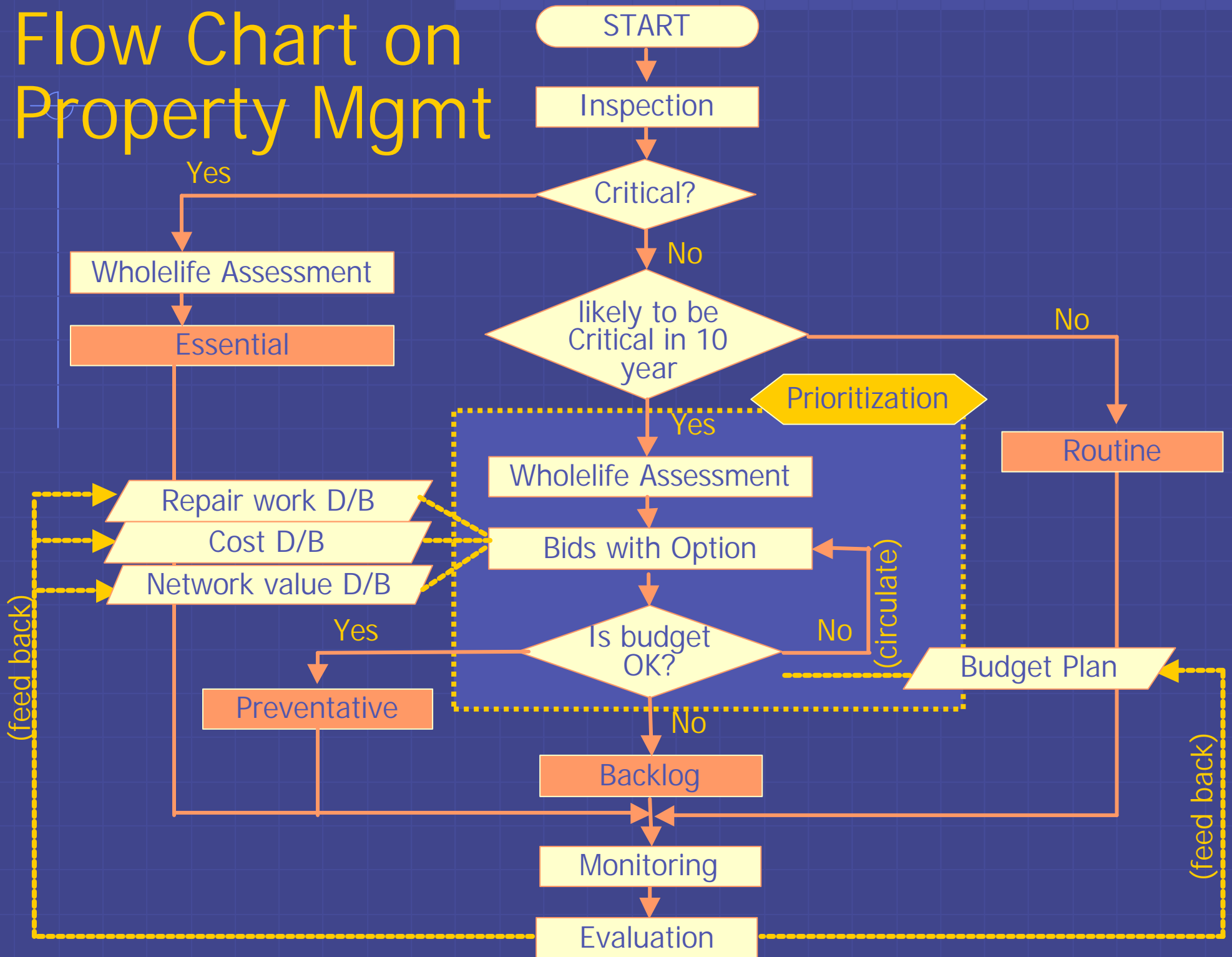
Conceptual Scheme of NPM-Based A/M



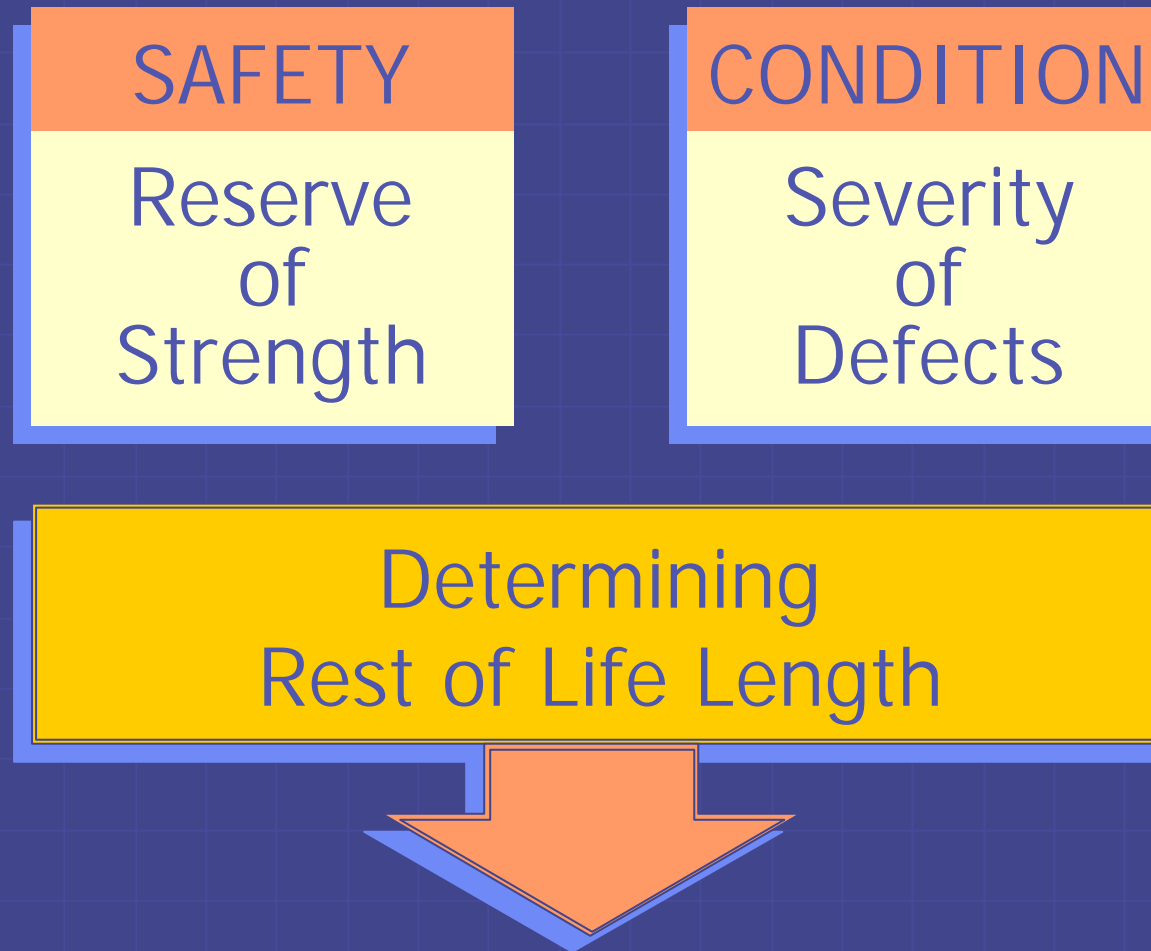
Conceptual Scheme of PPP-Based A/M



Flow Chart on Property Mgmt



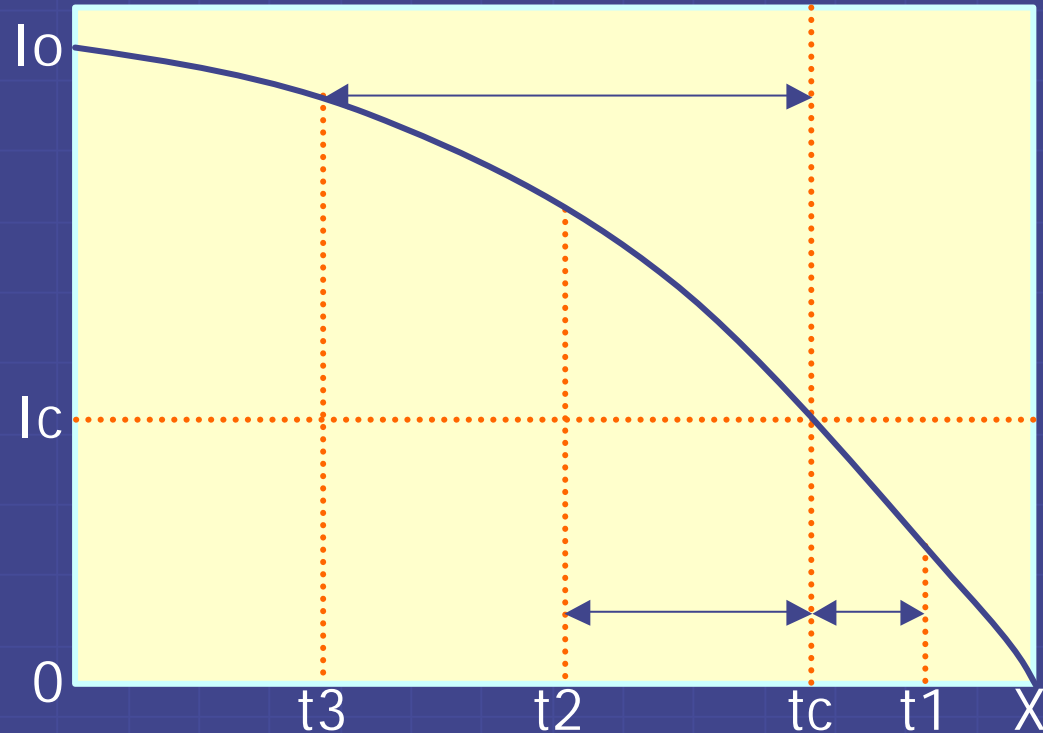
Assessment by Inspection [Objectives]



Rest of Life Length = No. of Years to $\left\{ \begin{array}{l} \text{Sub-standard} \\ \text{Critical} \end{array} \right.$

Criteria by Yrs to Sub-standard or Critical

t_1, t_2, t_3 : No. of years likely to reach to substandard or critical

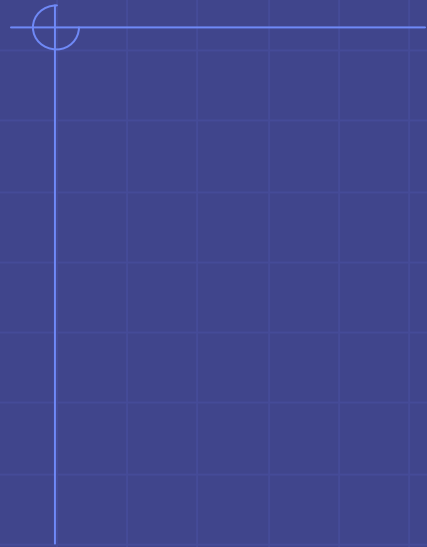


- : $t_c - t_1 = 0$ essential
- : $t_c - t_1 = 10$ preventative
- : $t_c - t_1 > 10$ routine

Evaluation of Asset Value

classification	Asset Value
Members Elements Components	None Evaluation not req's
Structure	None Evaluation not req's
Network	Yes See below

Type of Network	Asset Value
Railways Toll Roads	Fares (tolls) for the network
Water supply Sewage	Charges for the network
Power Supply other Energies	Charges for the network
National & Municipal Roads	Index compatible with road related taxes to be appropriately distributed by traffic volume



END