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Alternative Infrastructure Business Models

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The term ‘business model’ describes the ways in which a firm engages in business activities or describes the processes by which firms try to create value.

Three Elements in a Business Model

The *value proposition* is the distinctive contribution made by an organisation in the value creation process. Value may be defined in monetary terms, but may include social or environmental returns.

The identification, creation, co-ordination and management of a *value network* or the configuration of a value chain.

The value-capturing mechanism or *revenue model*. This includes the revenue streams that have been identified to support the value proposition and associated costs. The revenue model describes the various ways in which a network architect intends to monetize the value proposition.

A value network consists of at least four types of agent:

Network architects that oversee the co-ordination and integration of the value network.

Hybrid contributors who add value to the value network by developing and providing related or supporting products and services.

Product providers specialising in the development of intermediate products to enable the delivery of the value network.

Infrastructure co-ordinators involved with the integration of an infrastructure and related business model with other types of co-located infrastructure.

Infrastructure Spatio-Temporal Fix

Business models developed to provide infrastructure are unusual as they represent a process by which a value proposition, value network and revenue model is ‘spatially and temporally fixed’ in a place.

This ‘**infrastructure spatio-temporal fix**’ locks a business model value proposition into a place-based engineered structure.

A spatio-temporal fixed infrastructure business model may constrain future innovations in infrastructure and prevent other business models from emerging.

There are five types of infrastructure spatio-temporal fix.

1. **Place- or site- based** in which a particular infrastructure solution monopolises a site and excludes other solutions from being implemented.
2. This value proposition **locks other business models and network architects out** from this site and may through imitation become the dominant model for this infrastructure class
3. **The nature of the engineered structure or solution.** Decisions made in the design and construction of the infrastructure limit modifications to the completed structure and related business model.
4. The infrastructure solution is **customised** to take in to consideration local context.
5. The **degree of integration** between a piece of infrastructure and other types of infrastructure in an area.

IBM involves two time frames:

First, timing that occurs in the interactive relationship between decisions regarding the value network, financing and funding of a piece of infrastructure

Second, the unravelling of an infrastructure business model due to engineering obsolescence, societal change, radical innovation or politics and its replacement with another business model.

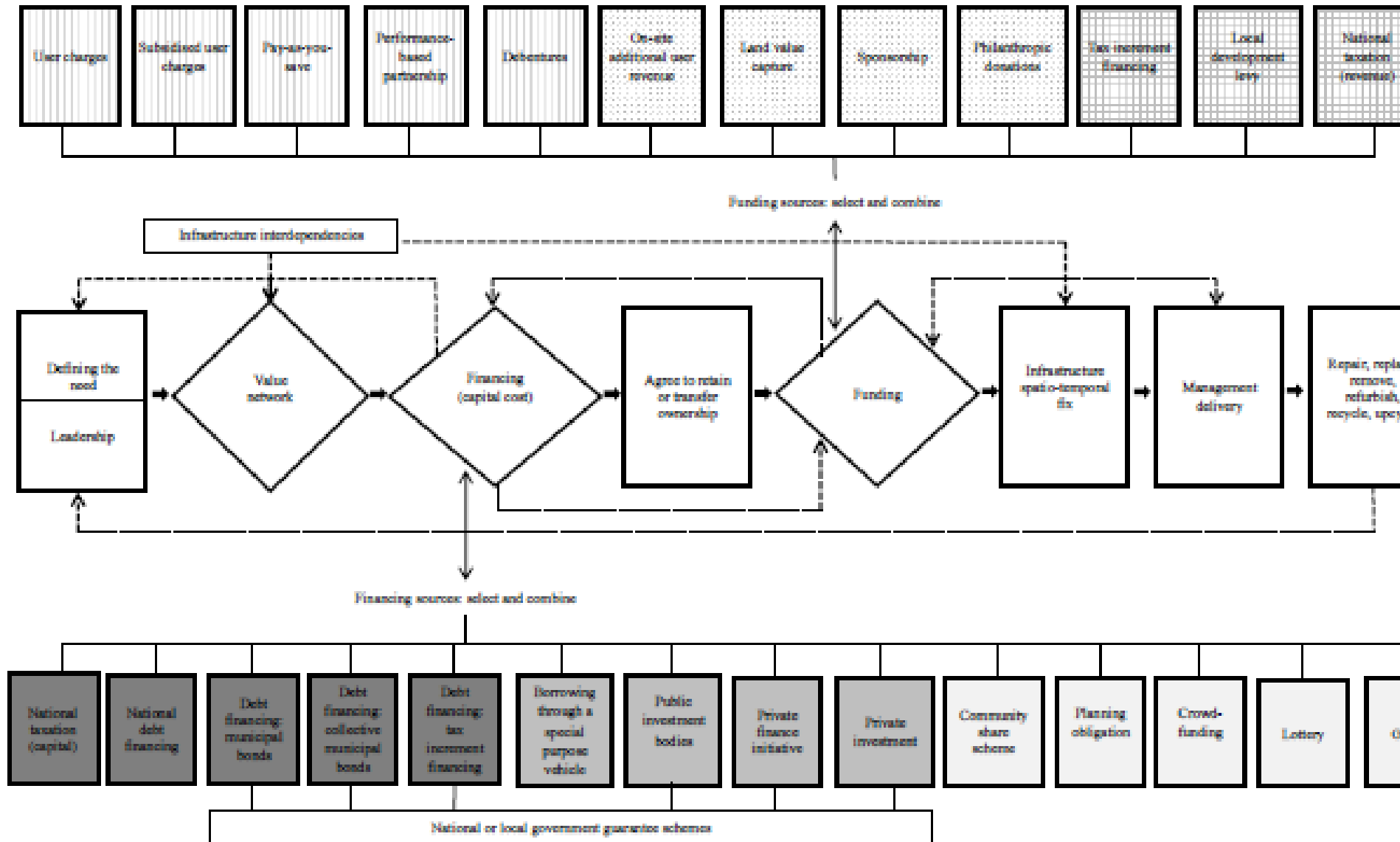
An Iterative Process

The relationship between funding, finance and the value network is complex and involves an iterative process of developing a viable business model within a specific spatial and temporal context.

Negotiation between the three primary decisions in the business model - value network and ownership, finance and funding - occurs and can result in a prolonged development process as these components are put in place.

Conventions and Infrastructure Business Models

Figure 1: Conceptual Framework of Local Infrastructure Business Models



Hong Kong Mass Transit Railway

Hong Kong Mass Transit Railway

Value Proposition

- Provide public transport for a growing population that did not require public subsidy
- Co-development of commercial and residential property alongside the railway

Value Network

- Initially the Hong Kong government led the development.
- Subsequent establishment of the government owned Mass Transit Railway Corporation
- Public listing of corporation in 2000

Financing

- Public sector investment and government debt financing for first development
- Subsequent developments financed through private investment

Funding

- User charges
- On-site additional user revenue (e.g. retail rental and advertisement revenue)
- Land value capture

New Library of Birmingham

Library of Birmingham	Value Proposition <ul style="list-style-type: none"> • Deliver a public library service that was widely accessible • Evolving demand, visions and opportunities enable use of multiple financing and funding mechanisms 		
	Value Network <ul style="list-style-type: none"> • Primary governance by the Free Public Libraries and Museum Committee 	Financing <ul style="list-style-type: none"> • Transition from private investment to national debt financing and capital receipts 	Funding <ul style="list-style-type: none"> • Transition from direct user charges to a blended funding package of national taxation revenue, user charges for specific services, philanthropic donations and on-site additional user revenue

Infrastructure Business Models

- 1. IBM that include financing and funding elements and have some degree of scale (Convention).**
- 2. Alternative/additional IBM (AIBM) that may include a significant human capital element that may be voluntary. These may be non-profit generation, but have a focus on service provision and not economic returns.**

Additional versus Alternative

Value and Alternative Infrastructure Business Models: Monetised:

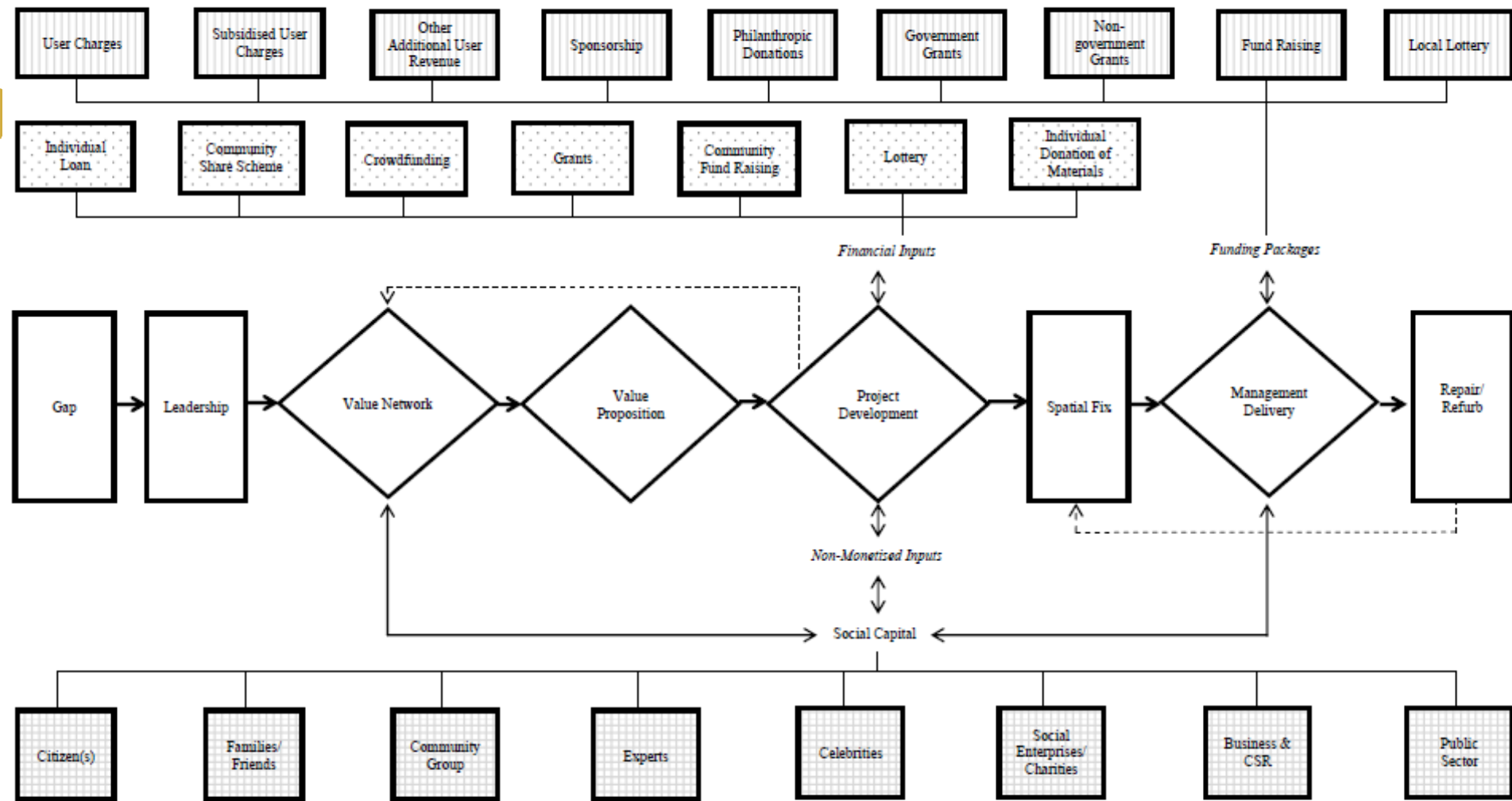
Value	Description
Employment	Increase in direct or indirect employment as a direct result of the infrastructure development
Growth (GDP)	Increase in GDP as a result of infrastructure development
Carbon Dioxide Reduction	Monetary charge for carbon dioxide emission
Reduced congestion	Monetary benefit from reduced travel time for commuters and freight
Tourism	Additional monetary benefit to local businesses from attracting visitors
High value projects support low value projects	Savings on high value projects are used to support investment on projects with a lower rate of return.
Land Value	Increase in the monetary value of land as a direct result from infrastructure development
Capital Receipts	Money from the sale of fixed assets specifically
Efficiency	Reduction in costs from efficiency improvements
Value for Money	Balance between benefit and cost
Reduced cost of service	Lowering the cost of the service provided
Revenue generation	Generation of income or profitability
Return on investment	Monetary benefit from initial investment
Industry or enterprise development	Additional capacity or resources for economic development
Upgrading of service	Additional capacity or quality of service
Re-engineering of asset	To reduce operation and maintenance costs



Value and Alternative Infrastructure Business Models: Monetised: Non-monetised:

Value	Description
Social cohesion	Citizens working together for a greater sense of community without exclusion
Local embeddedness	Engagement in the local area
Health and wellbeing	Improvement of the physical, mental or emotional state of individuals and communities
Environmental preservation	Protection and mitigation of environmental degradation; enhancement of environment and biodiversity
Education and skill development	Enhancement of learning provision
Behavioural change	Changes to attitudes and practices
Inclusion	Increased accessibility to services
Branding	Enhancement of image and development of identity
Sustainability	Meeting the needs of the population within given resources
Heritage	Historical value
Connectivity & Mobility	Capacity to move freely
Design innovation	Showcase originality and innovation in design
Repurposing	Utilising assets for another use
Reciprocity	Mutual exchange
Social equity	Fair distribution of costs and services
Service improvement	Better quality service and/or increased capacity
Knowledge transfer	Sharing of expertise and learning
Access to ownership	Individual or collective rights to asset ownership
Commemoration	Act of remembrance for individual or community
Place development	Additional facilities in the local area

Figure 2: Alternative Local Infrastructure Business Models



The relationship between infrastructure business models (conventions) and alternative or additional infrastructure business models.

The Workshop

- a) Identify AIBM in a specific infrastructure class (energy, water, movement, etc).
- b) Understand the relationships, if any, between these AIBM and other types of infrastructure business model.
- c) Explore the importance of AIBM in an infrastructure class. What are the drivers behind these model? What prevents such models being developed or adopted?
- d) To identify AIBM that stakeholders may be considering or have considered but not implemented yet.