

Plutarch: An Argument for Network Pluralism

- The Internet is no longer a homogenous network
- By making the differences explicit the heterogeneity can be handled better
- Different types of networks can be represented by **contexts**
- Differences between contexts are described by **interstitial functions**

Contexts

- Context is homogenous regarding
 - Addressing
 - Naming
 - Routing
 - Transport
- Contexts cannot overlap, but can contain other contexts

- An end system may belong to several contexts
- Connection from one end system to another may span several contexts
- Current IPv4 network would be an equal context among others in the authors' vision
- Addressing, naming, routing and transport mechanisms may vary between contexts

Interstitial Functions

- Defines how to handle the differences between contexts
- NAT and BGP are current examples of IFs
- IFs should allow network users to configure them, contrary to current practice
- IFs act as logical bridges between different contexts
- IFs will need some amount of state

Example

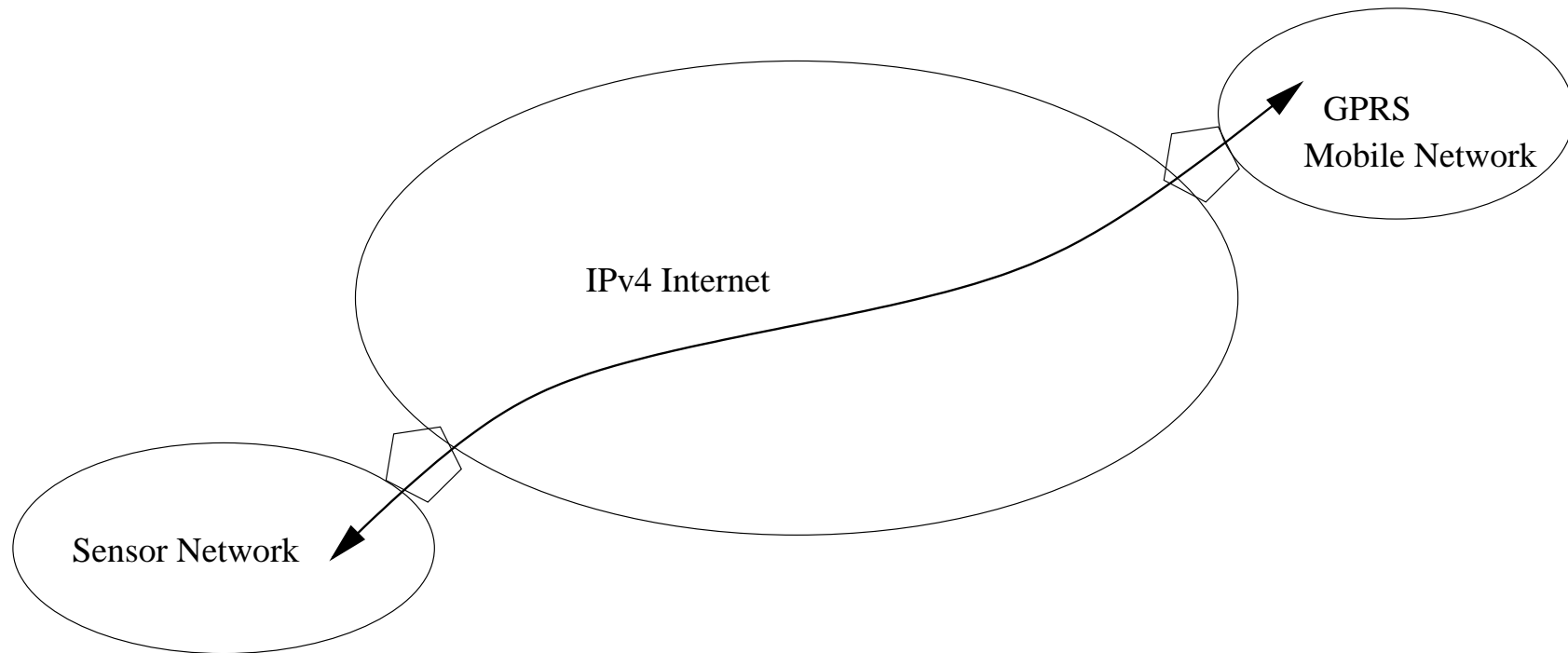


Figure 1: Connecting Across Contexts

A Strawman Interface to IFs

Plutarch Management Service Interface

`register(props) -> ctxt`

`deregister(ctxt)`

`link(ctxt1, ctxt2) -> [ifun*]`

`lookup(props, ttl, caps) -> [ctxt*]`

`route(name, props,
 ttl, caps) -> [ctxt-chain*]`

Conclusions

- Very pragmatic approach: the current IPv4 network can stay basically unchanged
- IPv4 network as one context among others, not as The Internet
- The paper is only a starting point—and it is very optimistic