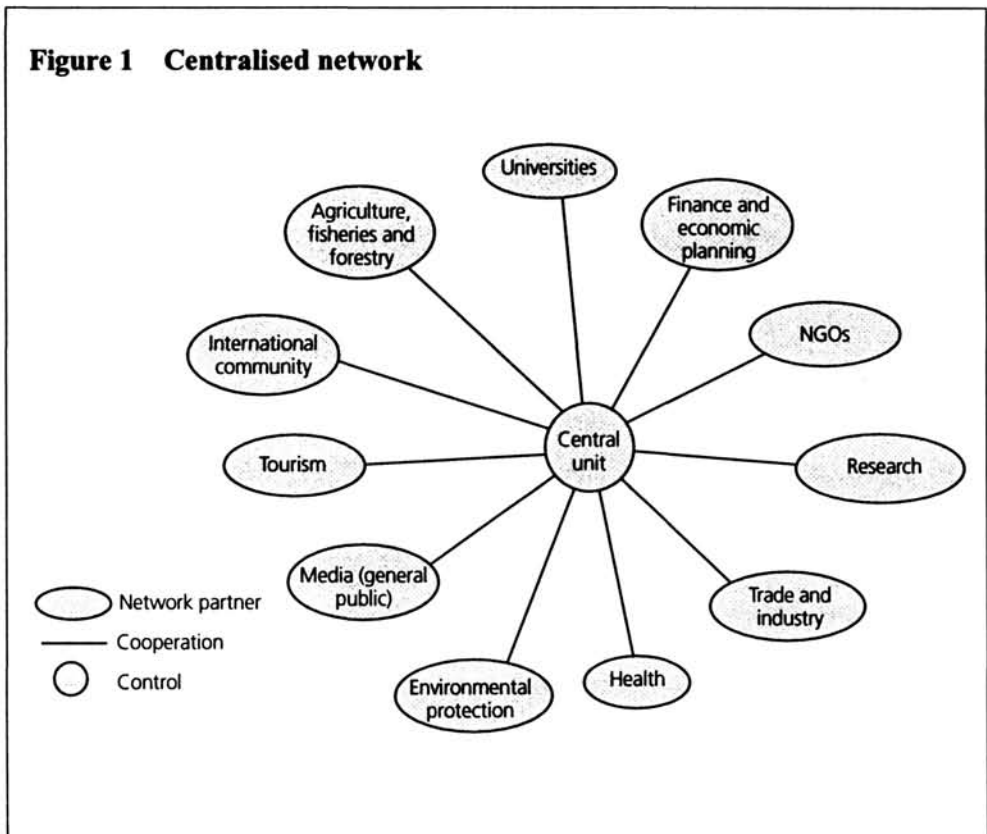
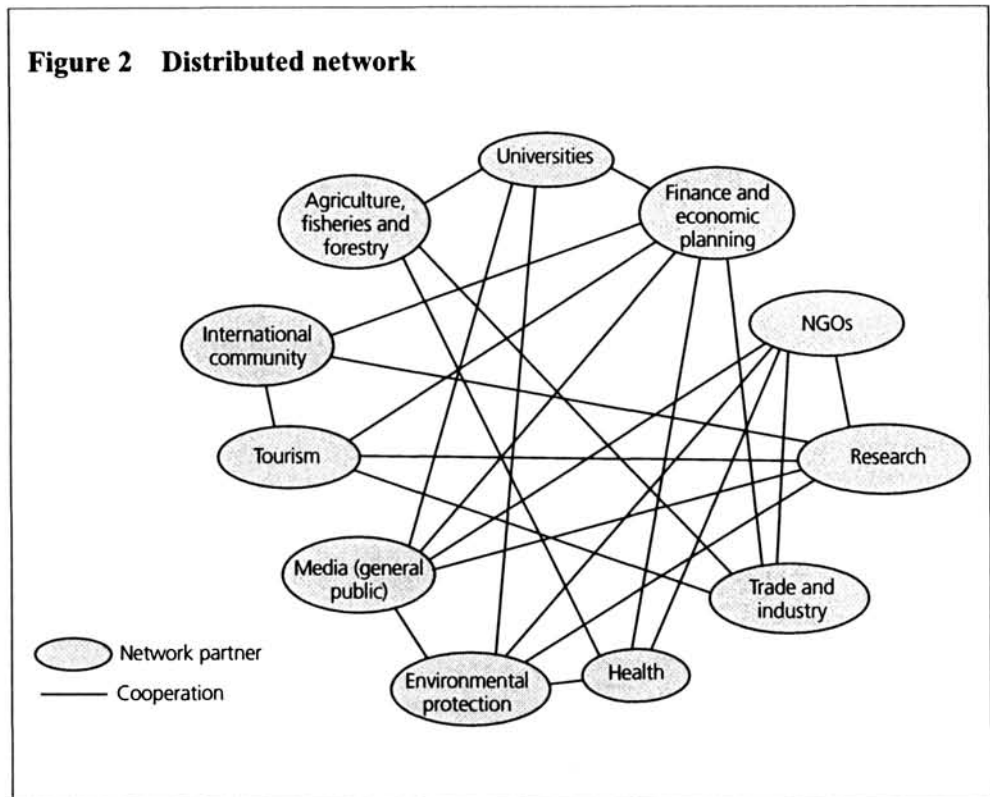


### 3 NETWORK DESIGN

There are two basic forms of information network. The first uses a **centralised** architecture (see Figure 1) where there is a single organisational unit at the centre of the network. Individual partners communicate and cooperate with that unit, for example by providing specific data and advice, but not directly with other partners. The implication is that the central unit provides all the necessary people, facilities and procedures to generate information products. This is equivalent to saying that the information system is located in one, central location, with partners supporting this as necessary. Centralised data management is efficient in situations where partners work within a single operation, so that individual feelings of data ownership are subsumed by corporate objectives. It is also useful in situations where, for security reasons, data must be managed under tightly controlled conditions (e.g. in a bank). Finally, it is the only practical way forward in cases where individual partners do not have the capacity to manage data themselves.



The second form of network has a **distributed** architecture (see Figure 2). Partners operate in an unrestricted environment where communication is encouraged between all parties. No attempt is made to coordinate or control the partnerships which may develop; there is total democracy of cooperation. This is equivalent to saying that the information system is spread across all of the network's partners, i.e. the network *is* the information system. Interestingly, the two architectures — centralised and distributed — mirror wider changes in information technology strategy over the last decade, from large, centralised computers (mainframes) to small, desktop computers (personal computers) communicating with each other via ever more extensive electronic networks. The Internet is the ultimate example of a distributed network, albeit chaotic and unfocused, although electronic communication is not essential to network functioning in general.



There are drawbacks to both architectures. In the first case, the central unit may be perceived as controlling access to data and information products by custodians (see Volume 5). Under such conditions it may be difficult, even impossible, to establish a 'cooperative spirit' since, quite correctly, partners expect to retain full rights and responsibilities over their data. With distributed networks, however, partners are not coordinated or provided with direction, resulting in duplication of effort, lack of agreed standards, and generally impeded progress towards common information objectives.

The weaknesses of both approaches can be rectified through the formation of a hybrid, or **managed** network, which allows free communication between partners and provides coordination and other network-wide services through a 'hub' (see Figure 3). Unlike a centralised network, the hub of a managed network serves the collective interests of the network's partners, rather than the specific interests of a single organisation or operation. Usually, the hub would be managed by a committee representing the interests of each partner in the network, plus associated administrative support (WCMC 1994). A dotted line is used to denote the hub in

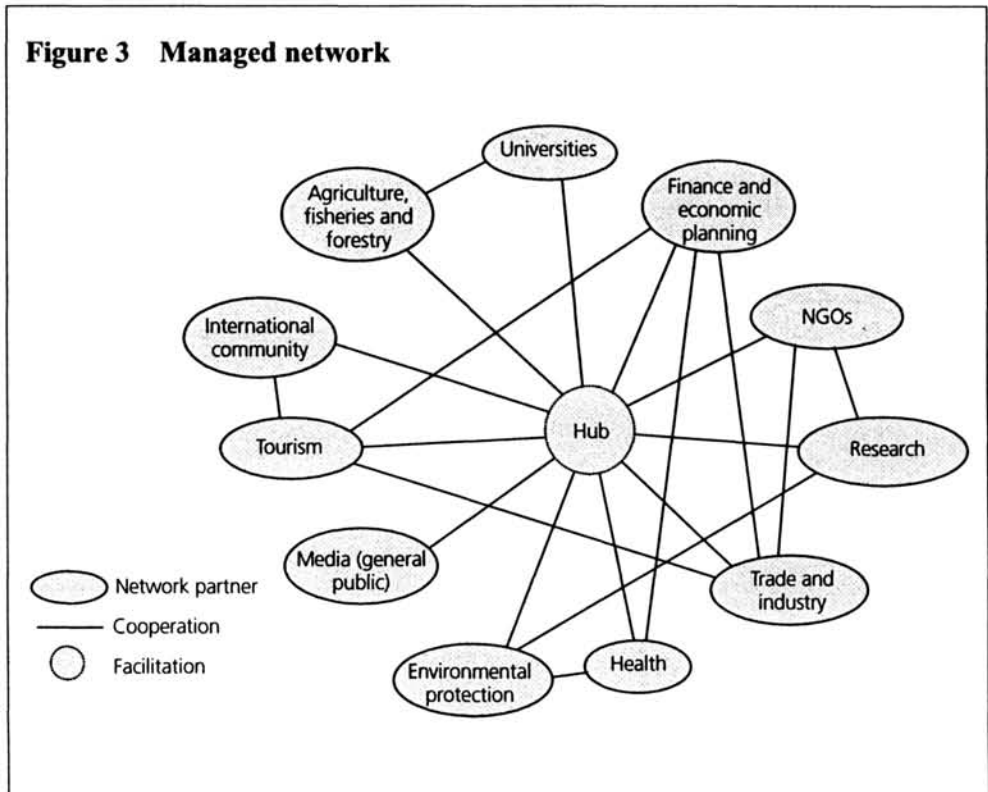


Figure 3 to reinforce its role as **facilitator**, not controller, of the network. A good measure of the success of the hub in serving collective interests is the number of bilateral partnerships it helps to form. This feature distinguishes the managed network from more centralised approaches. The table below summarises the advantages and disadvantages of each type of network.

Type of network	Advantages	Disadvantages
Centralised	Efficient planning and administration. Useful when capacity of partners is low.	Partners must be prepared to give up/mandate management of their data to another body.
Distributed	Perceived as very democratic. Cheap to set up.	Difficult to achieve long-term results due to lack of coordination.
Managed	Efficient planning and administration. Good communication and cooperation between partners.	Potentially costly to maintain.