

# Social Resources



Matthew Smith

<http://m.smithworx.com>

Christophe Giraud-Carrier

[cgc@cs.byu.edu](mailto:cgc@cs.byu.edu)

Brigham Young University

<http://dml.cs.byu.edu>

August 2010



**DML**

Data Mining Lab

# Introduction

- 📌 **Social Capital** - our networks are valuable

- 📌 **Social Capital and Social Resources**

  - 📌 “Assets in networks” - Lin 2001

  - 📌 “Access to and use of resources embedded in social networks” - Lin 2001

- 📌 **Social Capital Framework**

  - 📌 ESN, IAN, etc.



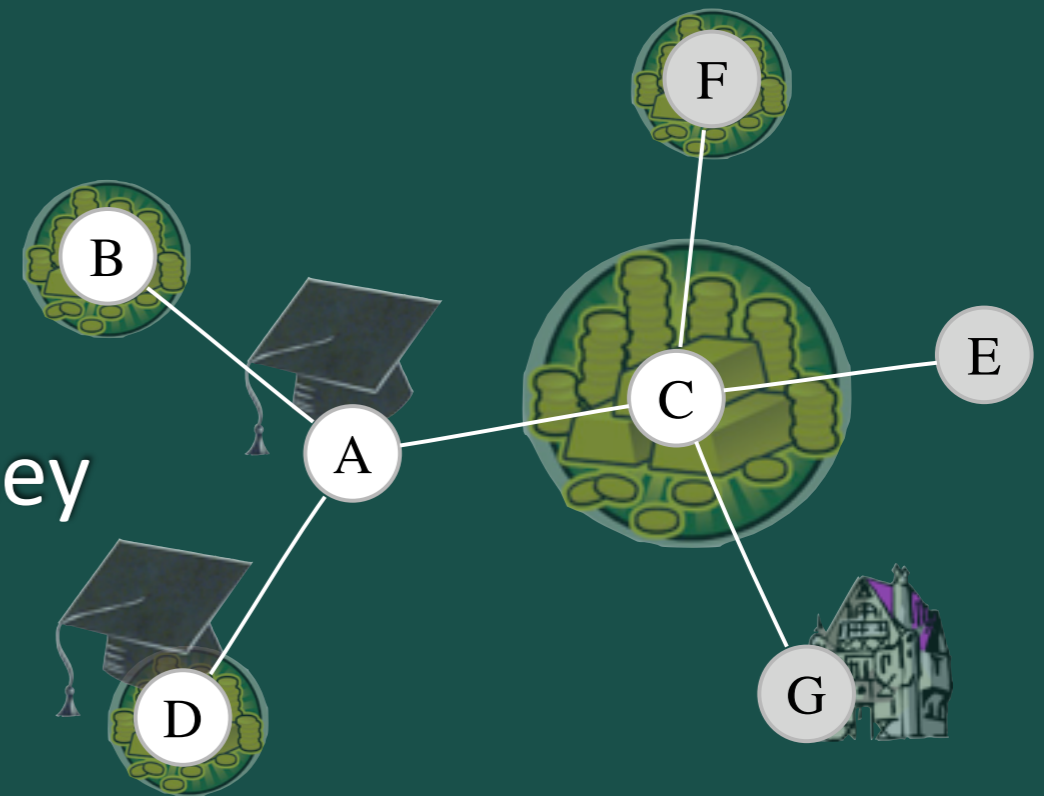
# Social Resources

## Material Goods

- land, houses, car, and money

## Symbolic Goods

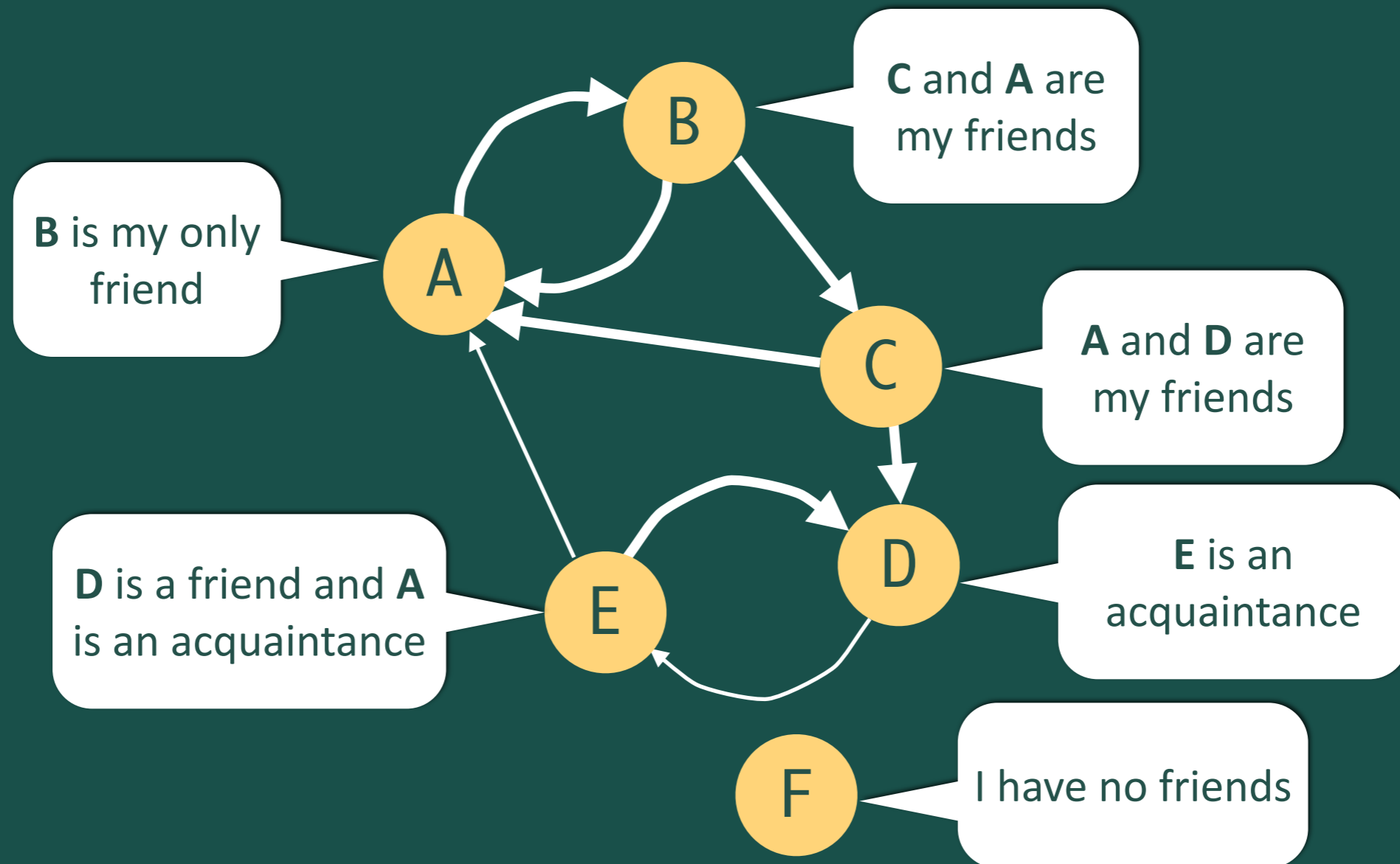
- education, memberships in clubs, honorific degrees, nobility or organizational titles, family name, reputation, or fame



*From: Lin 2001, Social Capital: A Theory of Social Structure and Action*

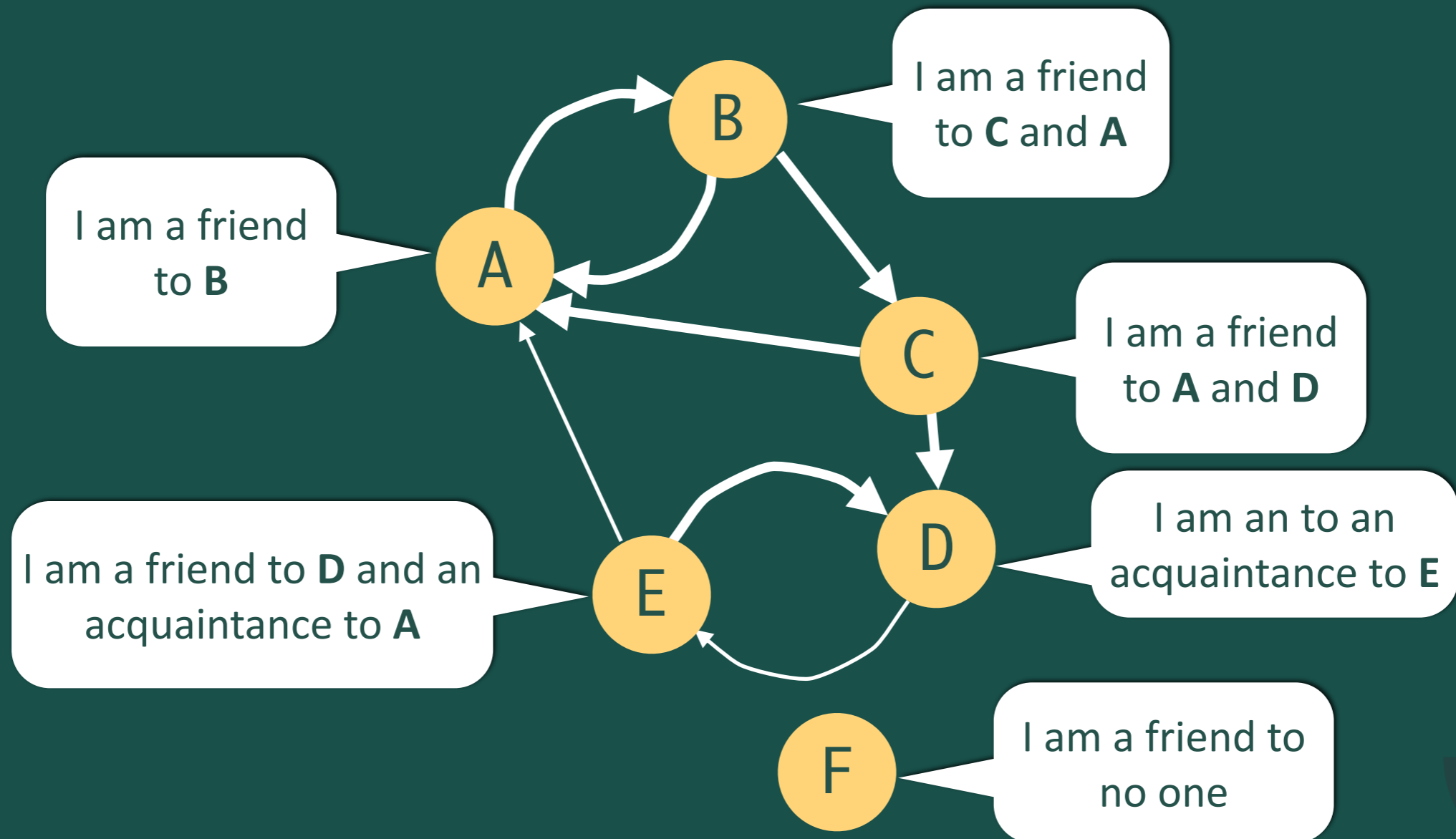
# Framework: ESN

## Explicit Social Network (ESN)



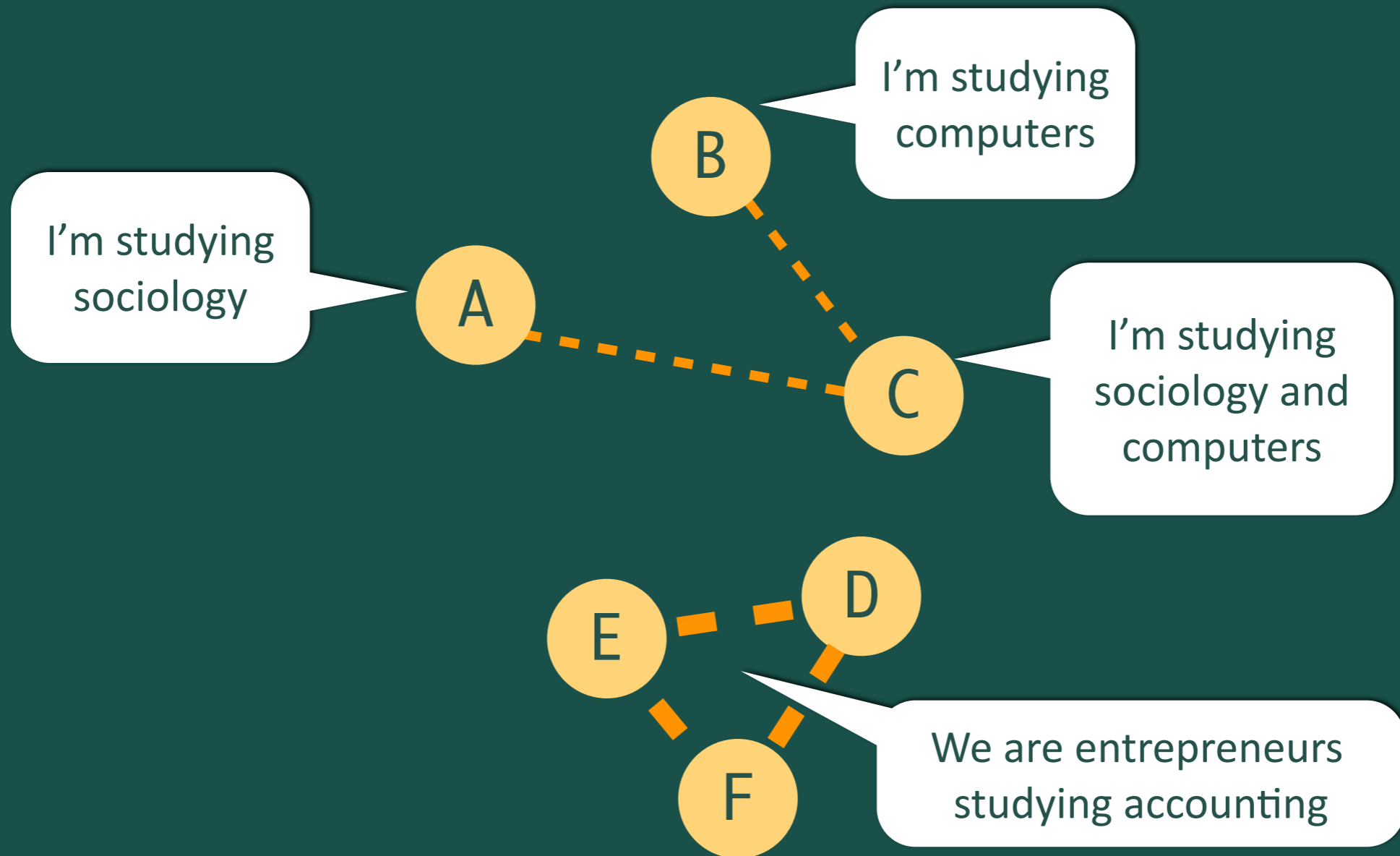
# Framework: ESN

📌 Slight meaning adjustment...

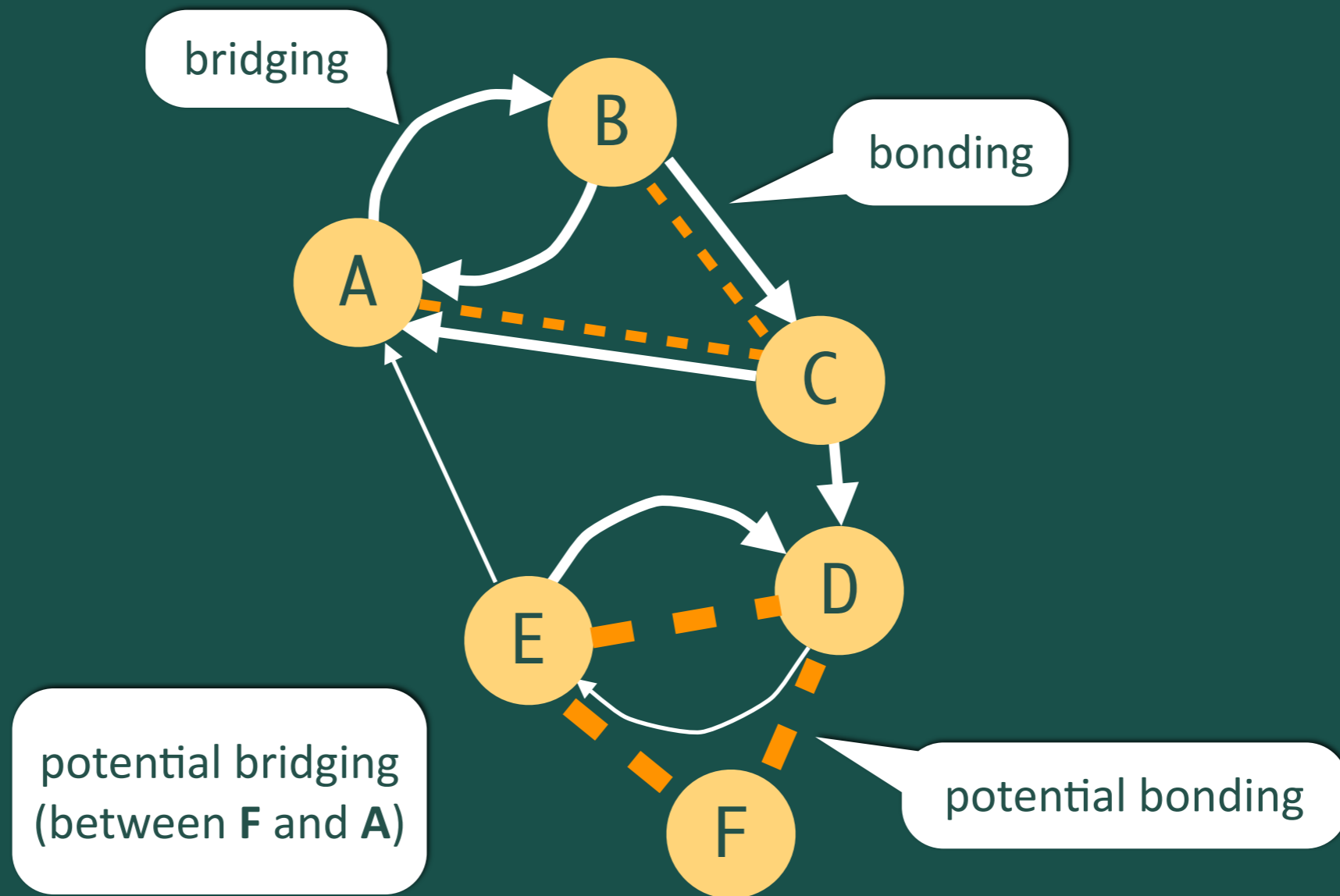


# Framework: IAN

## Implicit Affinity Network (IAN)



# Framework Facilitates

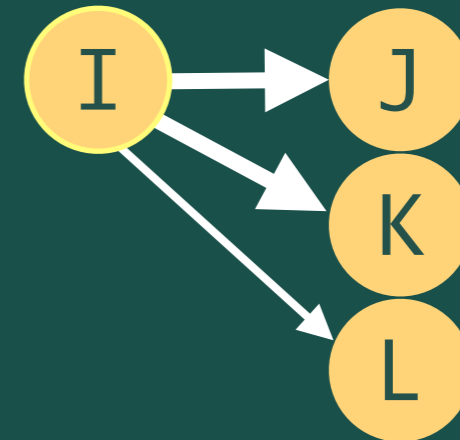


# Relationship Strength Modeling

- 📌 Initialized individually

- 📌 Frequency of interaction (data)

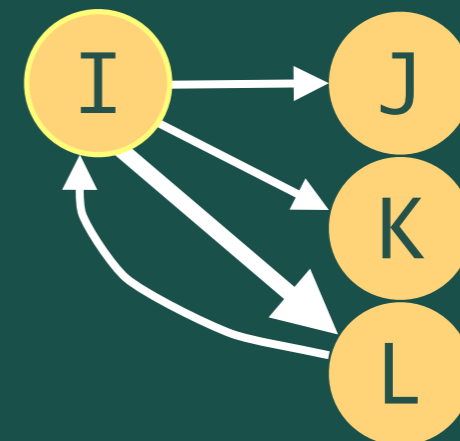
- 📌 Relationship roles (e.g., friend, acquaintance)



- 📌 Dynamic

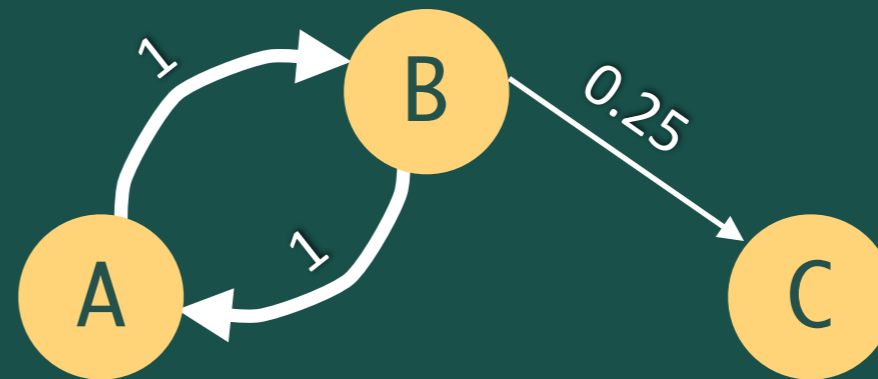
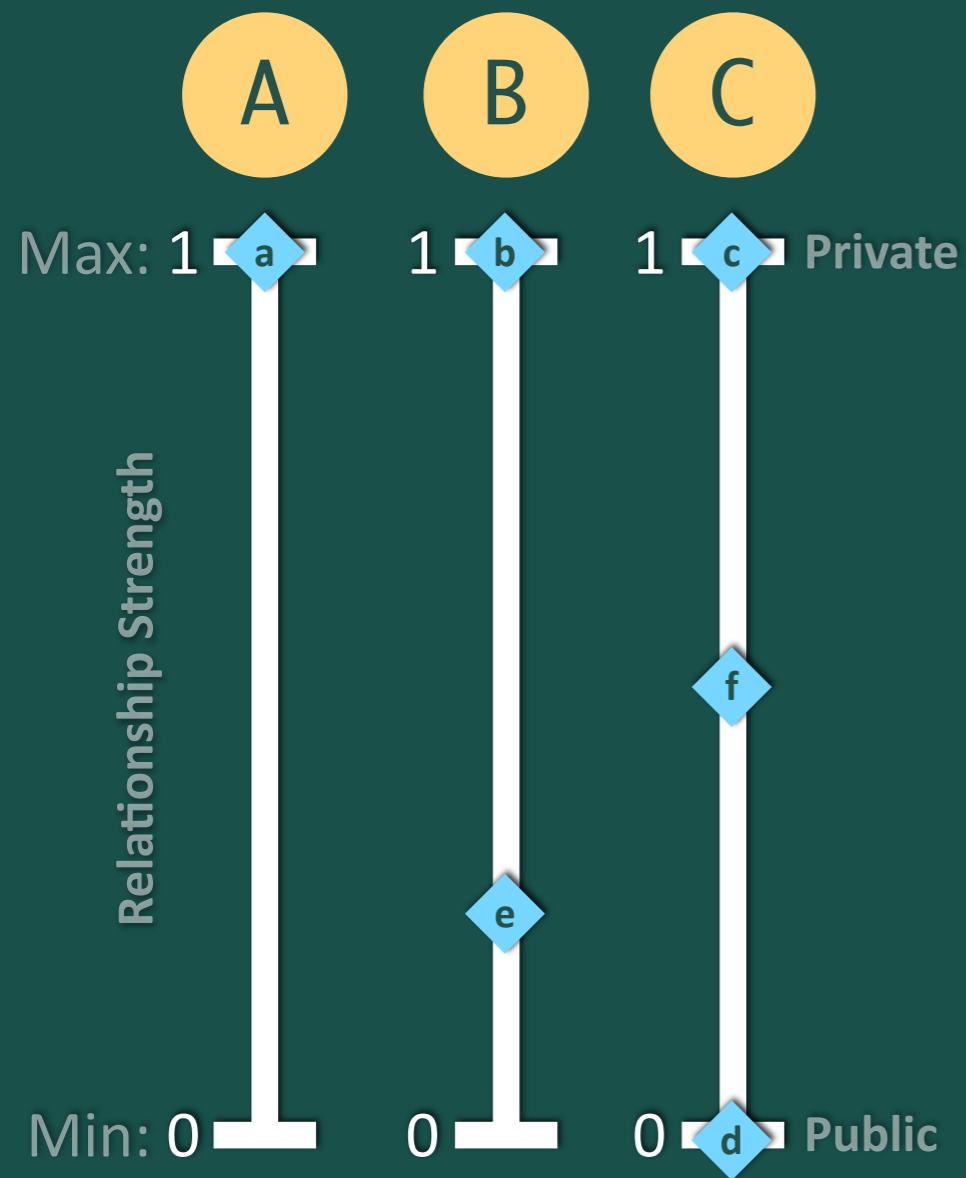
- 📌 Strengthens by interaction

- 📌 Weakens by lack of interaction



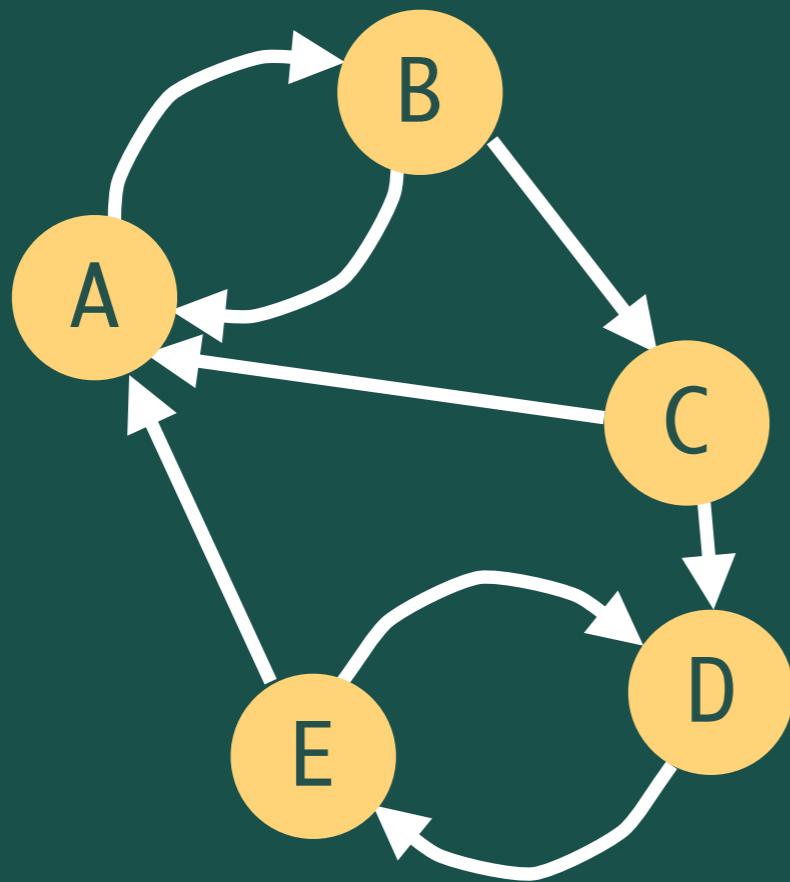


# Resource Availability Scale



A shares everything (i.e.,  $a$ ) with B  
B shares everything (i.e.,  $b$  and  $e$ ) with A  
B shares  $e$  with C  
C shares  $d$  with both A and B  
C shares  $c$  and  $f$  with nobody

# Example



resources

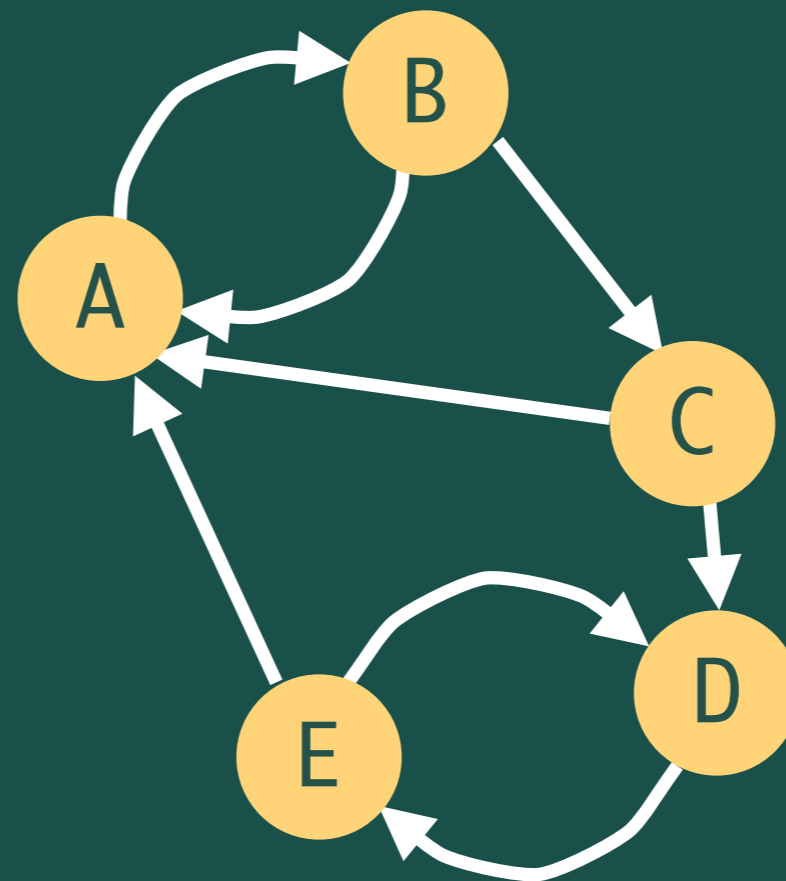

A	a, b
B	a, b, c
C	d, e, f
D	c, d
E	a, b

For all edges, assume  $s_{ij}^{\text{ESN}} = 1$



# Example

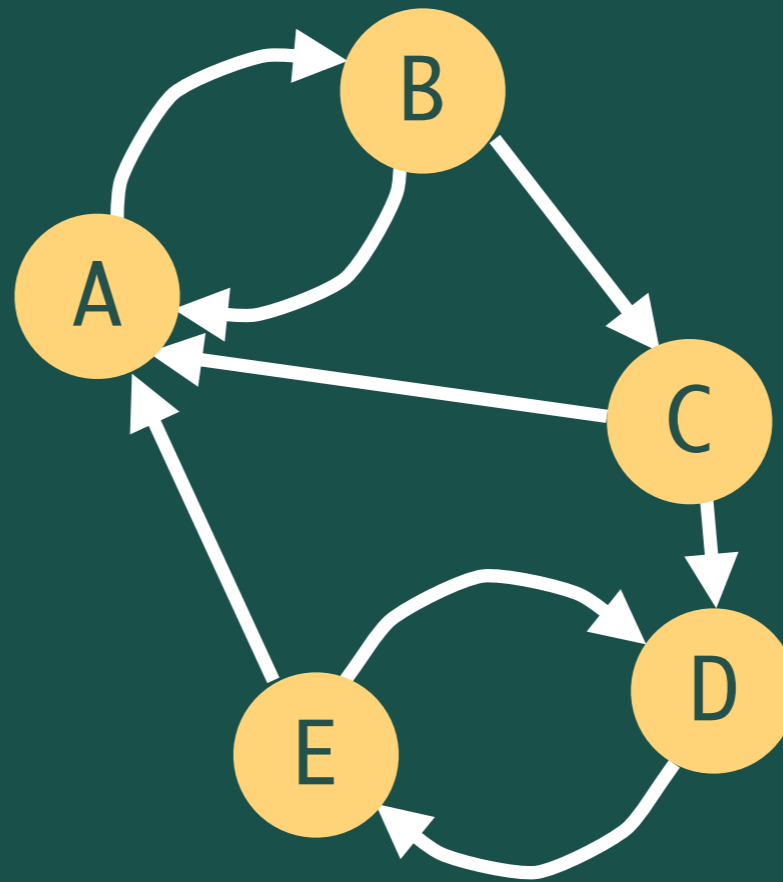
	<i>Bo.</i>	<i>Br.</i>	<i>SC</i>
A			
B			
C			
D			
E			



$t_0$	resources
A	a, b
B	a, b, c
C	d, e, f
D	c, d
E	a, b

# Example

	<i>Bo.</i>	<i>Br.</i>	<i>SC</i>
A	$2+0+2=4$	$1+3+0=4$	8
B	2	0	2
C	0	2	2
D	1	$2+2=4$	5
E	0	2	2



$t_0$  resources

A	a, b
B	a, b, c
C	d, e, f
D	c, d
E	a, b

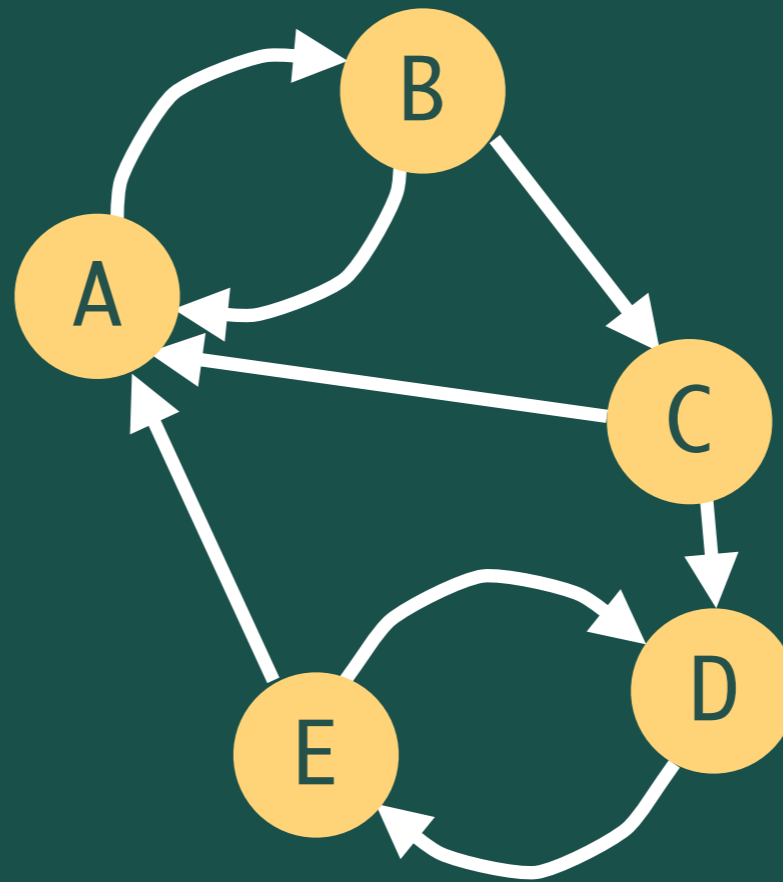
$t_1$  resources

A	<u>a, b</u> , c, d, e, f
B	<u>a, b</u> , c
C	a, b, c, <u>d</u> , e, f
D	a, b, c, <u>d</u> , e, f
E	a, b, c, d



# Example

	<i>Bo.</i>	<i>Br.</i>	<i>SC</i>
A	2+2+2= 6	1+4+2=7	13
B	3	3	6
C	3	0	3
D	2+2= 4	4+2= 6	10
E	2	4	6



*t*<sub>1</sub> resources

A	<u>a, b</u> , c, d, e, f
B	<u>a, b</u> , c
C	a, b, c, <u>d</u> , e, f
D	a, b, c, <u>d</u> , e, f
E	a, b, c, d

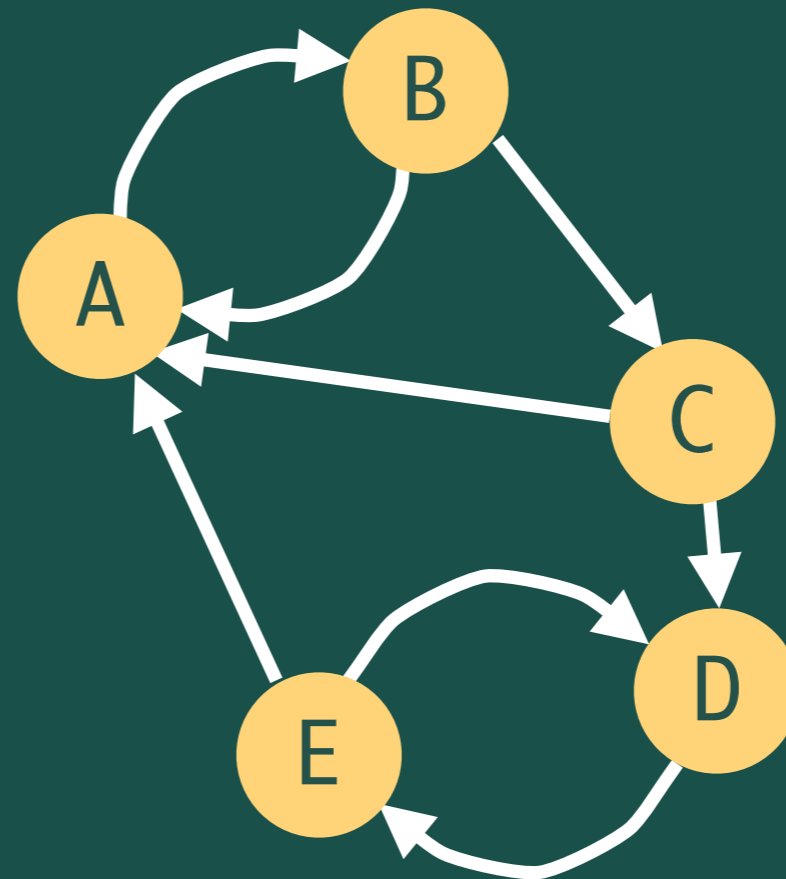
*t*<sub>2</sub> resources

A	<u>a, b</u> , c, d, e, f
B	<u>a, b</u> , c, d, e, f
C	a, b, c, <u>d</u> , e, f
D	a, b, c, <u>d</u> , e, f
E	a, b, c, d, e, f

# Example

Alternate Method:  
Offer What You Would Have  
(Notice Only Bo. & Br. Change)

	<i>Bo.</i>	<i>Br.</i>	<i>SC</i>
A	3+6+4=13	0	13
B	3	3	6
C	3	0	3
D	6+4= 10	0	10
E	4	2	6



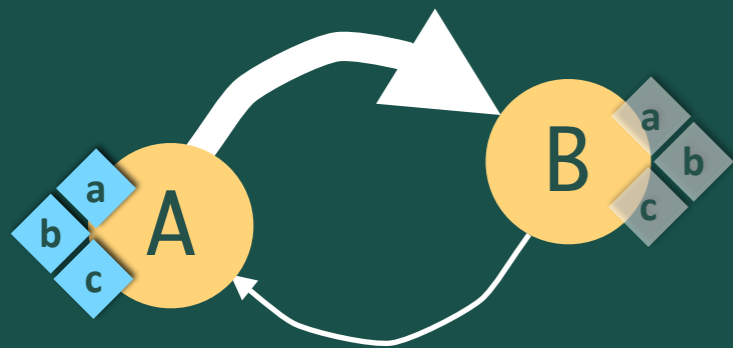
*t*<sub>1</sub> resources

A	<u>a, b</u> , c, d, e, f
B	<u>a, b</u> , c
C	a, b, c, d, e, f
D	a, b, c, <u>d</u> , e, f
E	a, b, c, d

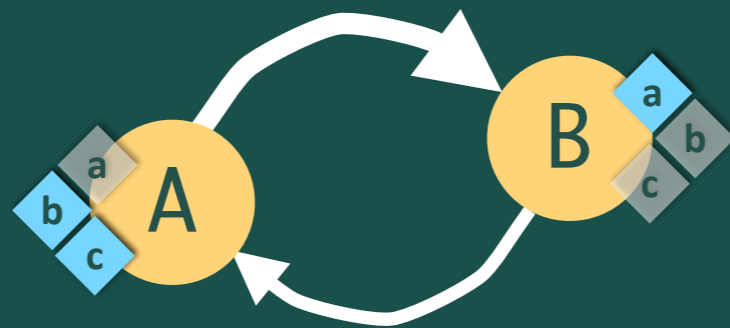
*t*<sub>2</sub> resources

A	<u>a, b</u> , c, d, e, f
B	<u>a, b</u> , c, d, e, f
C	a, b, c, d, e, f
D	a, b, c, <u>d</u> , e, f
E	a, b, c, d, e, f

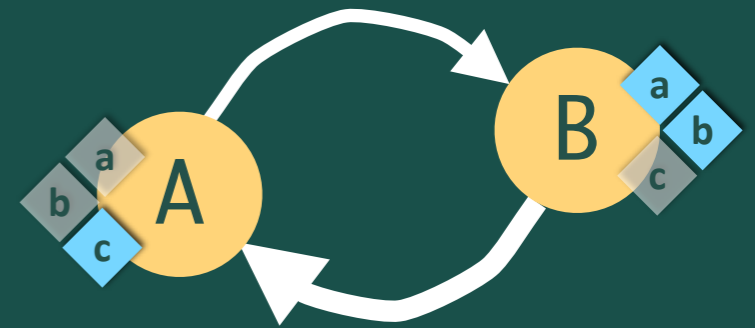
# Reciprocity



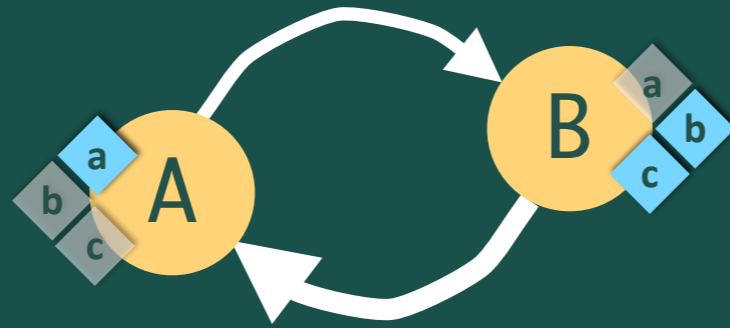
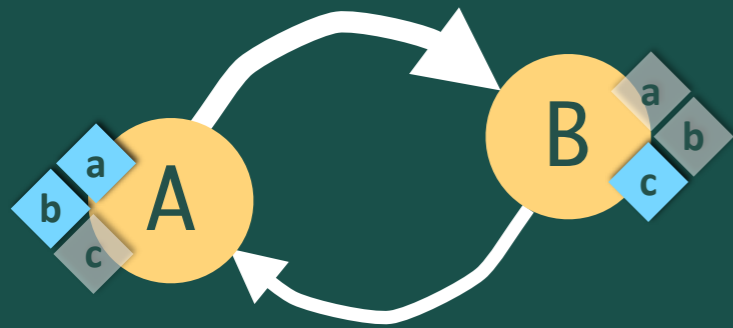
1  
6



2  
5



3  
4



# Questions & Comments

Ask me now:



Email or Call me:

**Matt Smith**  
**smitty@byu.edu**  
**(801) 788-4920**

Connect:

[m.smithworx.com](http://m.smithworx.com)

