



Social Network Analysis for Development Programming – Methods and Case Study

21 January 2016

USAID Local Systems Community of Practice

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about us

LINC is...

- A small business headquartered in Washington dedicated to *strengthening local systems*
- Expert in SNA, with three ongoing activities
- A sub-implementer of the SPACES MERL project

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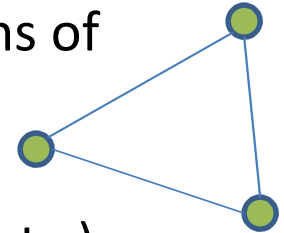
SPACES MERL is...

- Strategic Program for Analyzing Complexity and Evaluating Systems
- 2015-2018
- Funded by USAID's Global Development Lab and PPL
- Implemented by Johns Hopkins, GKI, LINC and RAN



SNA (in general)

- A way of thinking about social systems that focus attention on the relationships among actors in a system.
- A classic systems approach, measuring complex interactions of actors at multiple levels.
- Utilizes nodes (actors) and edges (relations).
- Attributes can be assigned to nodes (e.g. org type, sector, etc.).
- Analysis is conducted at the whole network and individual organizational level.
- ONA is a sub-set of SNA (organizational mode)



An actor's position in a network determines in part the constraints and opportunities that s/he will encounter, and therefore identifying that position is important for predicting actor outcomes such as performance, behavior or beliefs.

-Borgotti, "Analyzing Social Networks" (2013)



SNA (international development programs)



Key Applications

- Systems Mapping / Stakeholder Analysis
- Adaptive management
- Impact measurement
- Can be applied to multiple sectors whenever there is a need to better understand local systems.



Potential Limitations

- Census-based instrument, usually open-ended, leading to recall error
- Network must be carefully defined in advance
- Measurement typically in one mode (e.g. orgs, not individuals).
- Measures relationships between actors, not the nature or perceptions of actors themselves.



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step 1: assess research feasibility

Learning Objectives

1. Address critical WfD program design information needs
2. Assess specific functions within the WfD system
3. Provide comparative insight

Timeline & Locations:

- May-Sept, 2015
- 3 locations: Managua, Leon, Matagalpa

Data Collection Method:

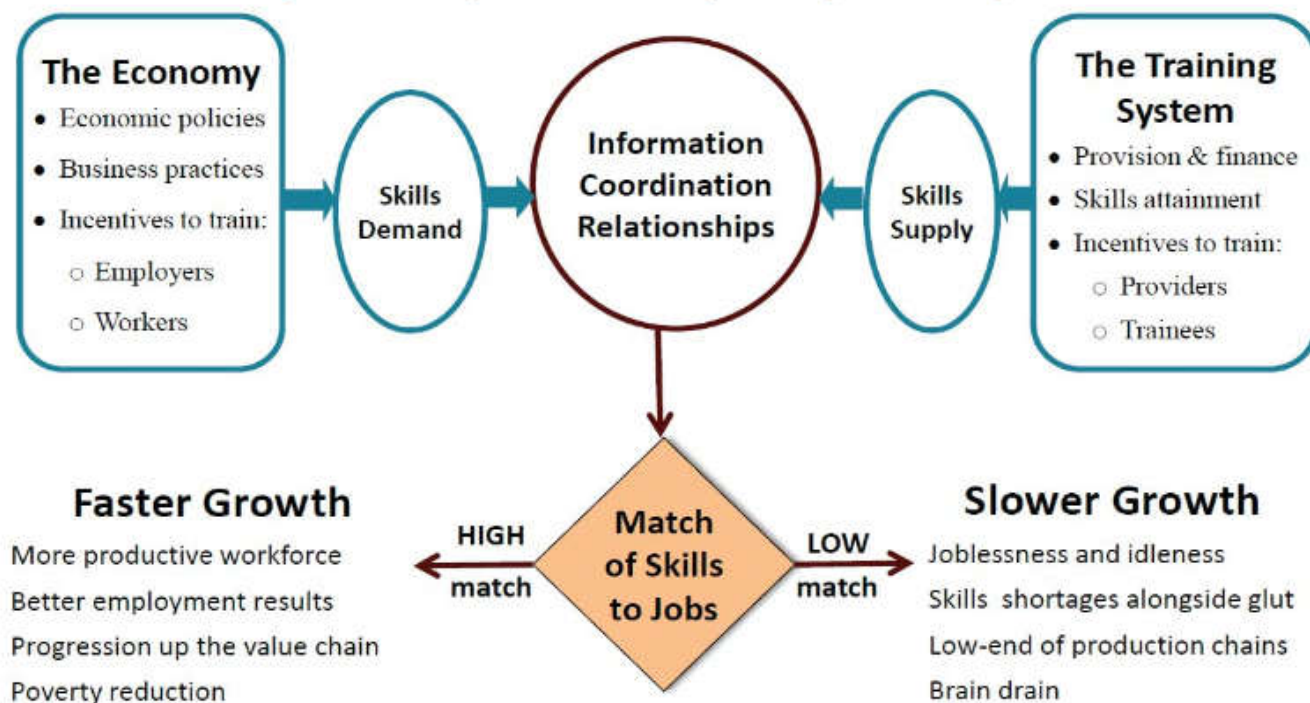
- Snowball nomination
- In-person enumeration / probing

Analytical Tool(s):

- NodeXL



step 2: establish a theory of change explicitly connecting SNA research to change objectives



Alignment of skills demand and skills supply is central to a well-functioning WfD system. In systems where the match is good, significant benefits can accrue in the form of a dynamic and productive workforce, and higher rates of employment and labor utilization.

World Bank, Systems Approach for Better Education Results. SABER Working Paper Series: "What Matters for Workforce Development: A Framework and Tool for Analysis" (No 6, April 2013), pp. 10-15.

step 3: define the network and relationship question

Open-response snowball census presents challenges:

- Captures full network
- Respondents identified thru referrals
- Census stops at network boundary

Network members should:

- Consist of actors with a common goal
- Be organizations, not individuals
- Operate within appropriate geographic boundaries
- Note simply employ job-seekers
- Not simply be job-seekers

Relationship Question(s):

“Please list the organizations / institutions / companies that support workforce development with which your organization has had a relationship with during the past 12 months.”

For each institution named, please indicate your perception of the strength of the relationship (1 = very weak; 3 = average; 5 = very strong)



step 4: assign attributes to capture learning objectives

Attributes:

- Actor characteristics related to learning priorities.
- Enable us to segment data and project maps on the basis of characteristics.
- Must be built into questionnaire.

Functional Groupings:

- Private Enterprise (Employer); n=13
- Educational Institution; n=7
- Vocational / Technical School; n=21
- Government; n=8
- Business Association; n=16
- Employment Agency; n=6
- Labor / Trade Union; n=3
- NGO; n=32
- External Stakeholder (Donor, Foundation); n=25

Demographics:

- Women-led orgs
- # of Employees
- Formal / Informal

Subnetworks:

- Agriculture
- Construction
- Tourism

step 5: develop the questionnaire

Questionnaire should :

- Capture # of directed ties
- Measure strength of ties
- Be open-ended, not roster
- Minimize potential for recall error
- Be administered by trained enumerators
- Be time-bound
- Account for multiple names of a single actor

To measure strength of ties:

- Assign values to relationship type
- Include Likert scale ranking of perceived strength

To minimize recall error:

- Can be completed by multiple representatives of one organization
- Enumerator prompting techniques

To be time-bound:

- Only refer to connections that have taken place within the past year

To reduce potential for entry errors:

- Questionnaire includes “other names of organization” field
- Naming protocols dynamically updated



step 6: implement census and analyze results

Census Implementation:

- Enumerator training
- Instrument testing
- 2 FTE enumerators for 2 months; 1 supervisor / data cleaner
- 3 geographic locations

Analysis & Reporting:

- 4 person analytical team (Dr. Bunger, Sommerville, Fromer, Hempfling)
- 2 month iterative process
- Multiple presentation events



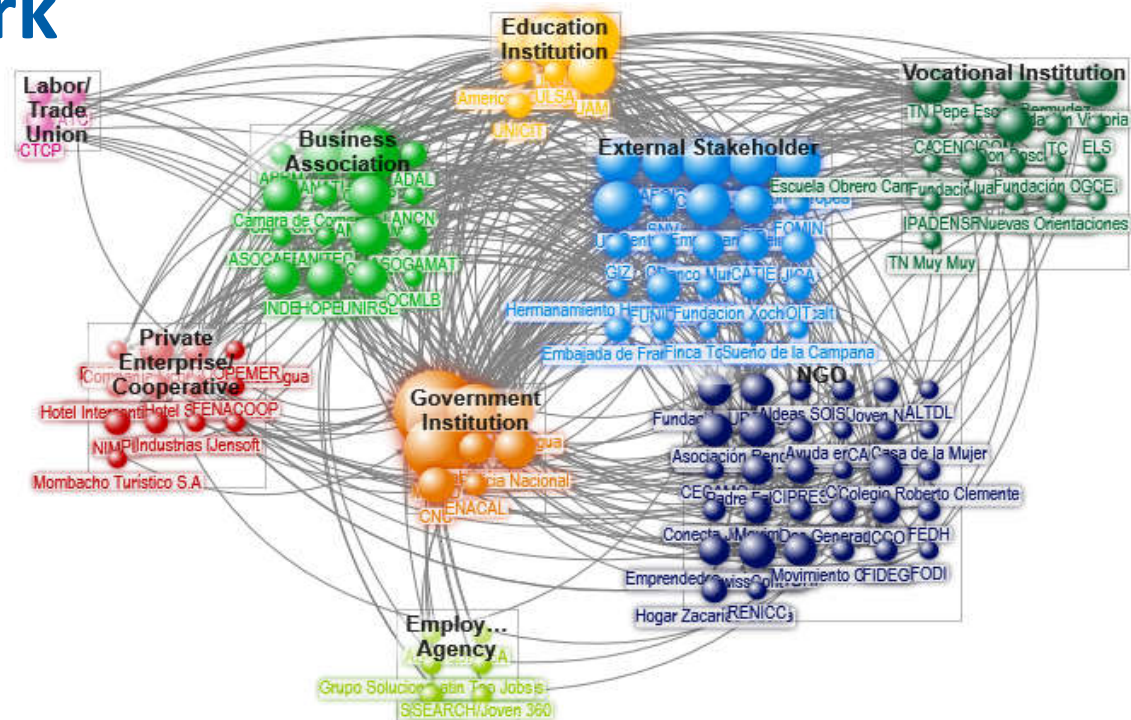
Download Link:

www.linclocal.org/tools/network-analysis/



the whole network

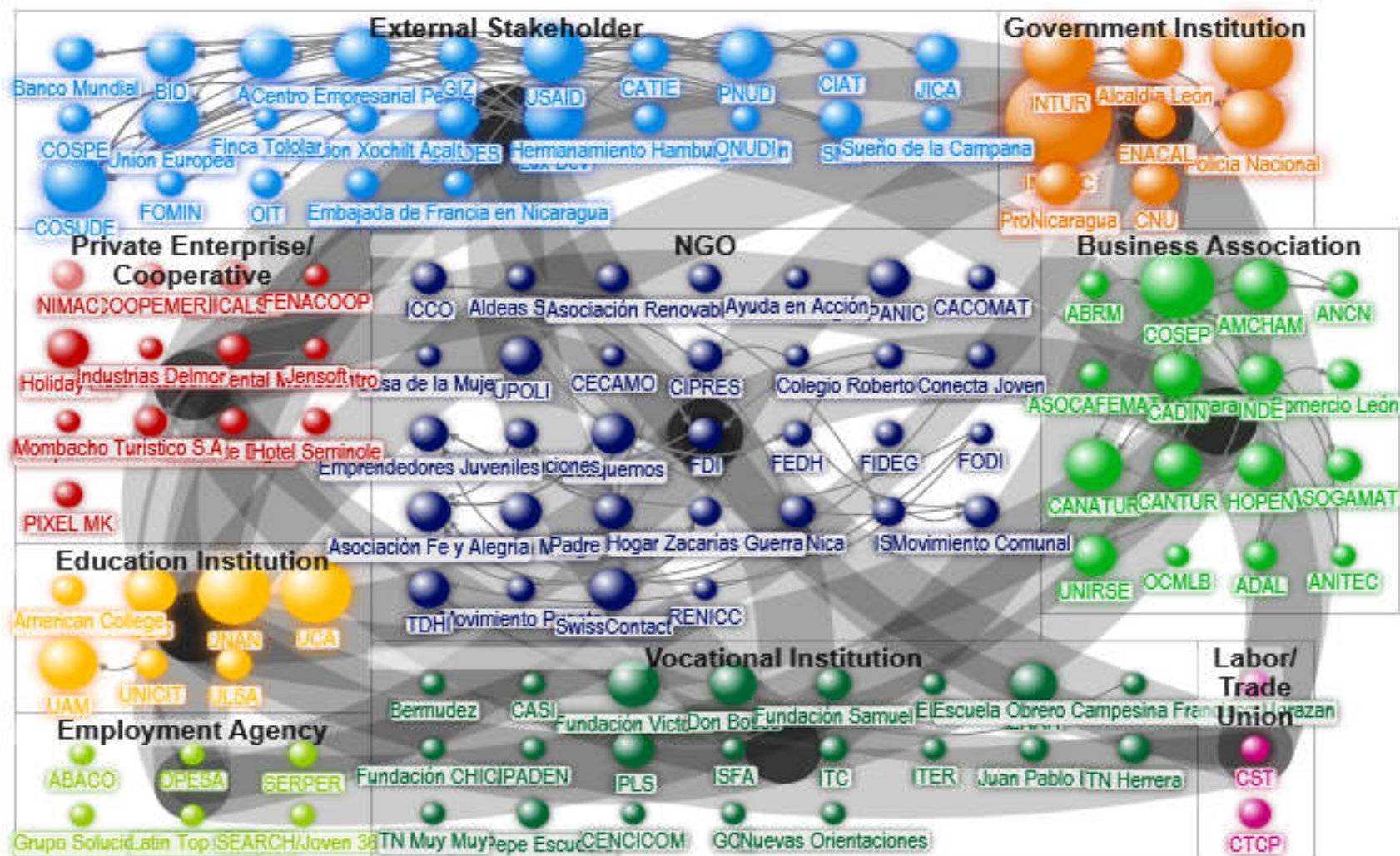
Network Phenomena	Results
Basic Network Features	
Size	131
Ties	566
Components	1
Network Cohesion	
Density	3.3%
Betweenness Centrality	207.48
Closeness Centrality	0.003
Distance between Actors	
Diameter	5
Average Distance	2.5762
Strength and Clustering	
Reciprocity (Av / Med)	14% / 25%
Clustering Coefficient	13.7%
Potential for Change	
# of Actors	133
Desired ties	732
Potential Density	4.2%



Observations	WfD Strategies
Diffuse but resilient network with no single actor capable of disruption	<ul style="list-style-type: none"> Network hub development Incubation of pivotal actors / groups
Weak reciprocity among actors	<ul style="list-style-type: none"> Strengthening network communities Deepening intragroup relations
Network clustered around smaller groups, more than the network as a whole	<ul style="list-style-type: none"> Engage sub-groups for rapid diffusion Forge new intergroup ties to bridge gaps
Weak potential for change absent outside intervention	<ul style="list-style-type: none"> Targeted WfD network development programming



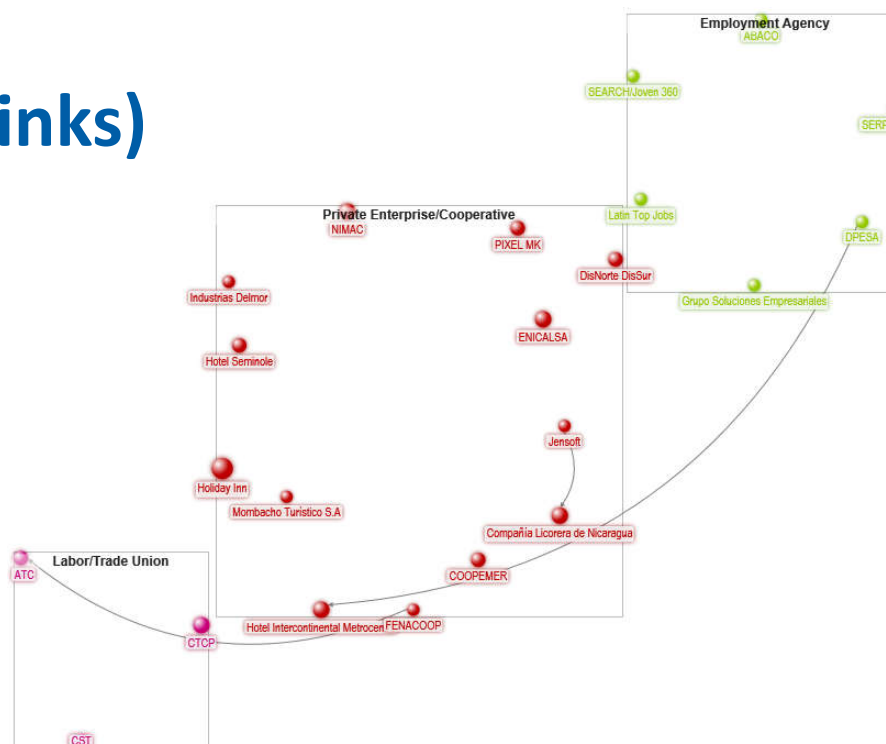
functional groups



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WfD functions (weak intragroup links)



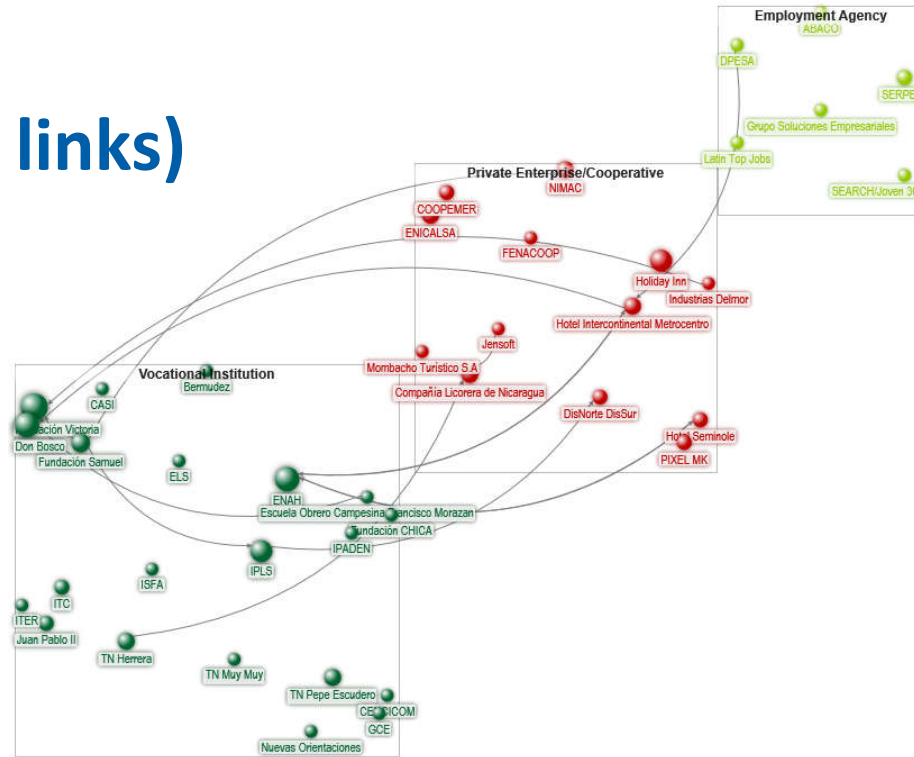
Observations

Weak intragroup ties among employment agencies, unions, employers

Strategies

- Incubation, group coordination, joint initiatives
- Business devt support to expand ties of small groups

WfD functions (missing intergroup links)



Observations

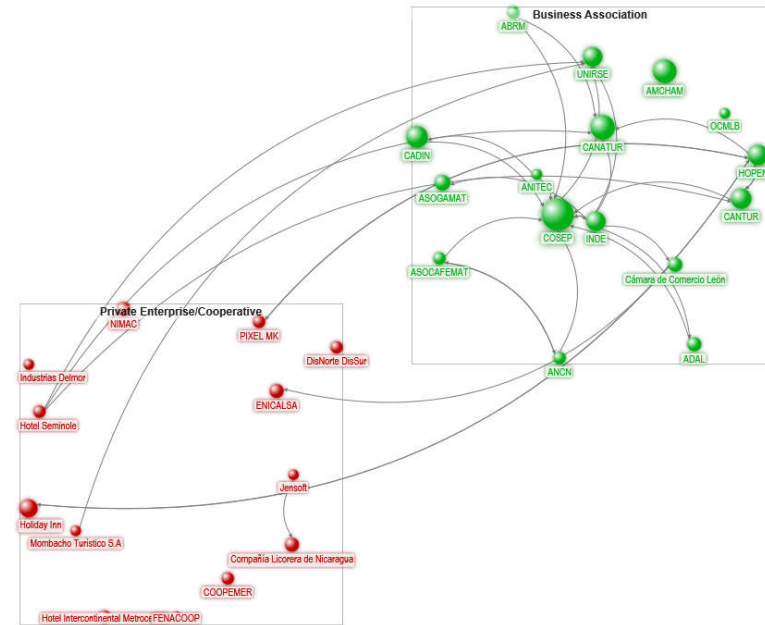
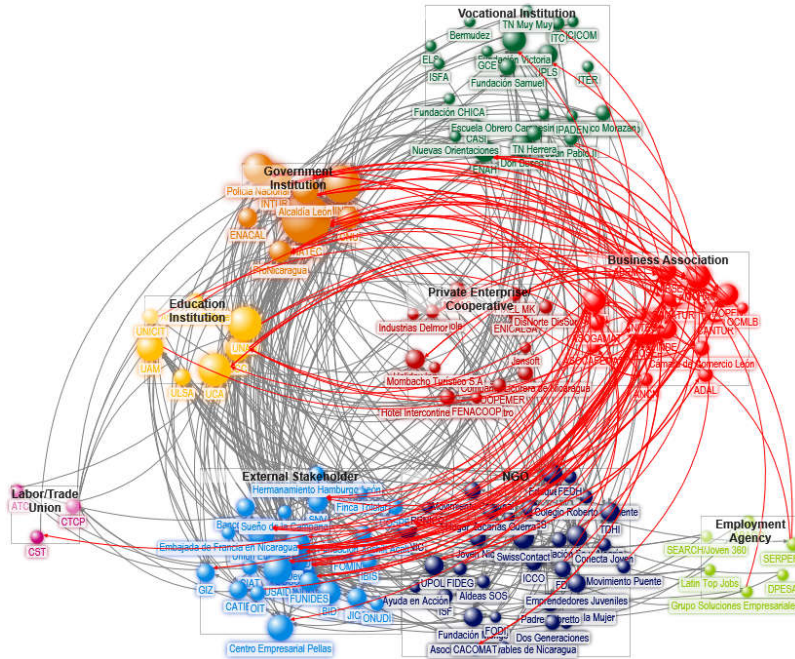
Weak intragroup ties among employment agencies, unions, employers

Weak links between employment agencies, vocational institutions and employers

Strategies

- Incubation, group coordination, joint initiatives
- Business devt support to expand ties of small groups
- **Strengthening critical links between these groups, especially via employment agencies**

WfD functions (associations)



Observations




- Weak intragroup ties among employment agencies, unions, employers
- Weak links between employment agencies, vocational institutions and employers
- Associations have strong position in network, but weak ties to employers

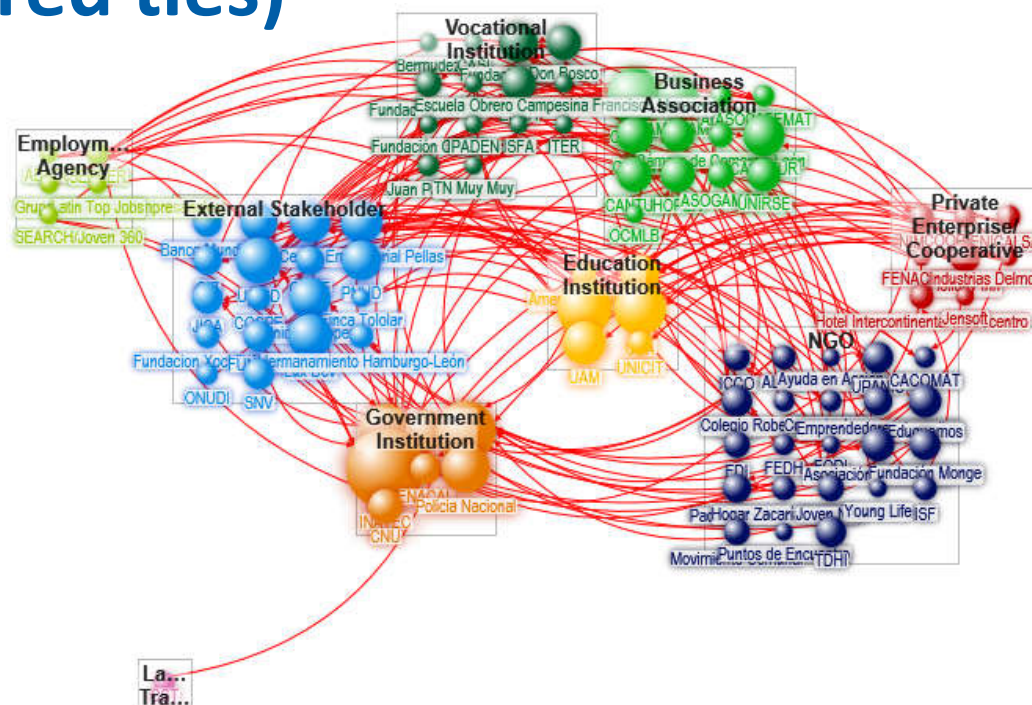
Strategies

- Incubation, group coordination, joint initiatives
- Business devt support to expand ties of small groups
- Strengthening critical links between these groups, especially via employment agencies
- Potential node(s) for hub development
- Bolster member services / links



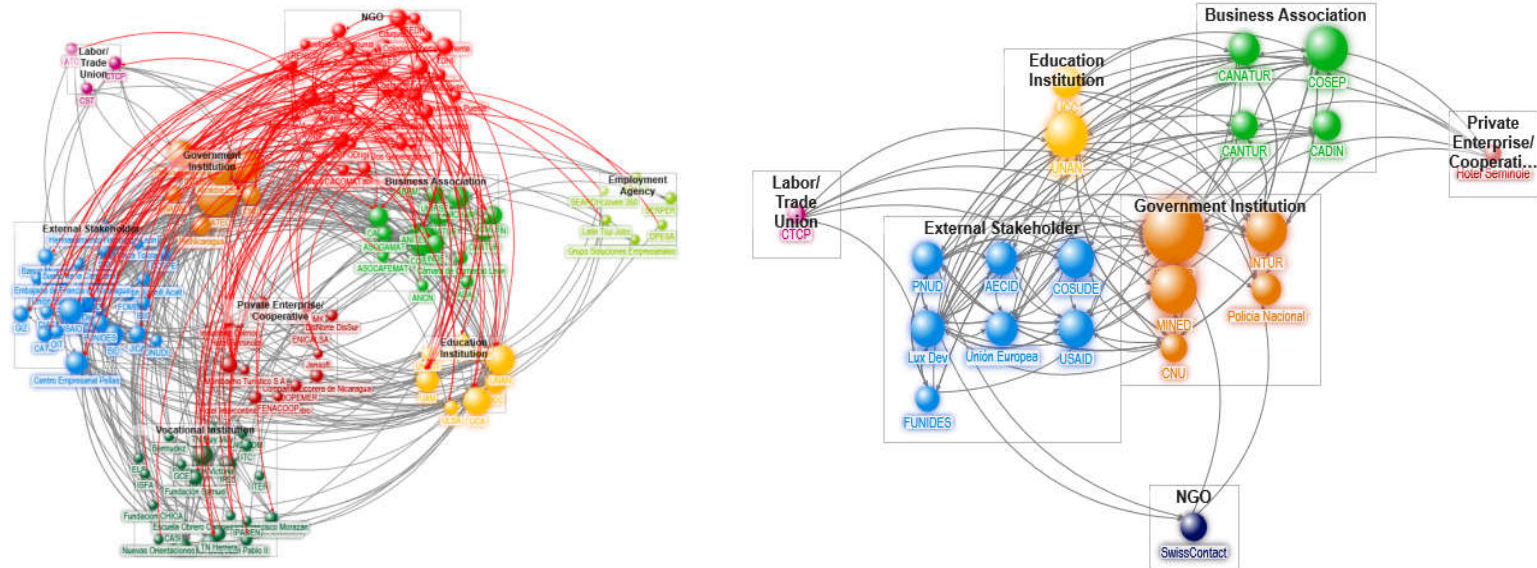
WfD functions (desired ties)

Group	Desired In-Ties	Organization	Desired In-Ties
Govt. 	93	INATEC	47
		MINED	26
		INTUR	20
Educational Institution 	65	UNAN	21
		UCA	19
		UNI	13
		UAM	12
External Stakeholder 	94	COSUDE (SDC)	15
		USAID	14
		Lux Dev	13
		Centro Empresarial Pellas	11
		Unión Europea (EU)	11
		AECID	10
		PNUD	10
		Fundación Telefonica (MOVISTAR)	10



Observations	Strategies
Weak intragroup ties among employment agencies, unions, employers	<ul style="list-style-type: none"> Incubation, group coordination, joint initiatives Business devt support to expand ties of small groups
Weak links between employment agencies, vocational institutions and employers	<ul style="list-style-type: none"> Strengthening critical links between these groups, especially via employment agencies
Associations have strong position in network, but weak ties to employers	<ul style="list-style-type: none"> Potential node(s) for hub development Bolster member services / links
Donors, govt, educational institutions have highest levels of social capital and prestige	<ul style="list-style-type: none"> Facilitation based strategies Leverage for advocacy and influence

WfD functions (NGOs)



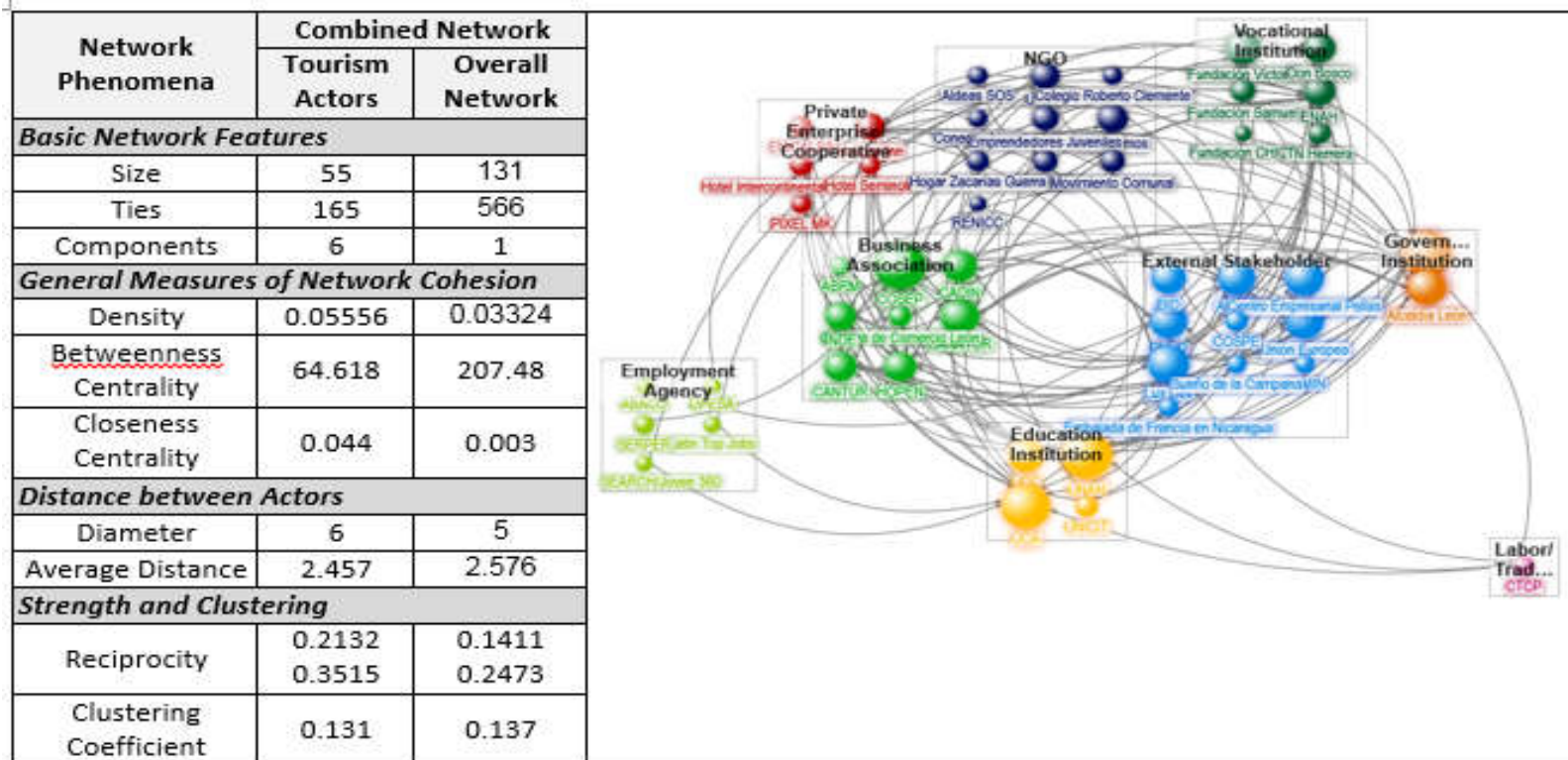
Observations

- Weak intragroup ties among employment agencies, unions, employers
- Weak links between employment agencies, vocational institutions and employers
- Associations have strong position in network, but weak ties to employers
- Donors, govt, educational institutions have highest levels of social capital and prestige
- NGOs are entrepreneurial, eager partners but constrained by a lack of influence**

Strategies

- Incubation, group coordination, joint initiatives
- Business devt support to expand ties of small groups
- Strengthening critical links between these groups, especially via employment agencies
- Potential node(s) for hub development
- Bolster member services / links
- Facilitation based strategies
- Leverage for advocacy and influence
- Leverage connectedness to multiple actors**
- Beware of limited utility convening powerful actors**

tourism subnetwork example



Observations

- Tourism subnetwork 2X as dense as the whole network, and reciprocated relations greater. Construction similar.
- Tourism subnetwork has high involvement of pivotal actor groups (employment agencies, associations, employers).
- Agricultural subnetwork similar to whole network, but has highest levels of participation.

Strategies

- Indicative of potential for whole network growth
- Organize WfD initiatives around sectors for max. impact
- Leverage specific sectors of high activity to best reach pivotal actor groups
- Utilize agriculture to engage large numbers of actors
- Beware of diffusion, perhaps due to rural factors

lessons learned

- Carefully map network analysis to a theory of change or development hypothesis. (e.g. SABER model)
- Establish a clear network boundary (e.g. common goal, geography).
- Establish proxies for job-seekers (e.g. NGOs, Unions, TVET) as it may be impossible to include them in the census.
- Expect little regional variation in metrics between multiple networks where there is overlap among actors. (e.g. government, national NGOs, donors)
- Consider the willingness of network actors to participate in the survey, especially in centralized environments. (e.g. INATEC)
- Develop strategies to assess potential for network growth in the absence of a baseline. (e.g. desired linkages, comparative subnetworks)



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thank you

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