

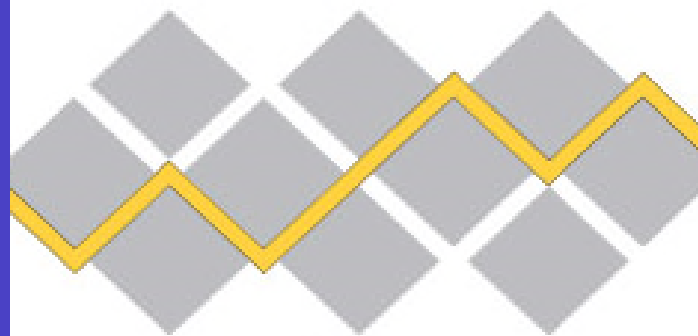
Consensus Decision- Making in IETF Standards

**Dr. Susan Hares,
Regent University**



Agenda

Consensus Decision-Making in Internet Standards (Dr. Susan Hares)



The
**INTERNET ENGINEERING
TASK FORCE**

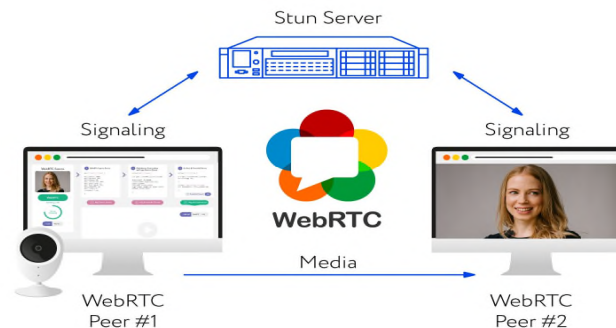
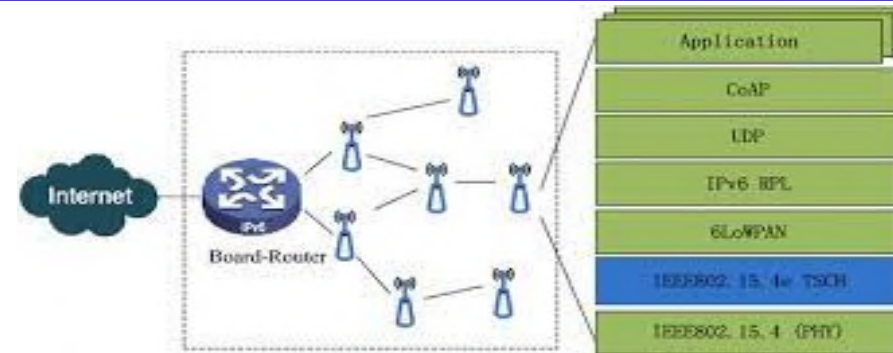
**IETF's Goal:
Make the Internet work better**

- Consensus Decision-Making in TMT in IETF
- 3 Phase Mixed-Mode Study
- Limits to Study

Public Leadership in Open Standards for the Internet

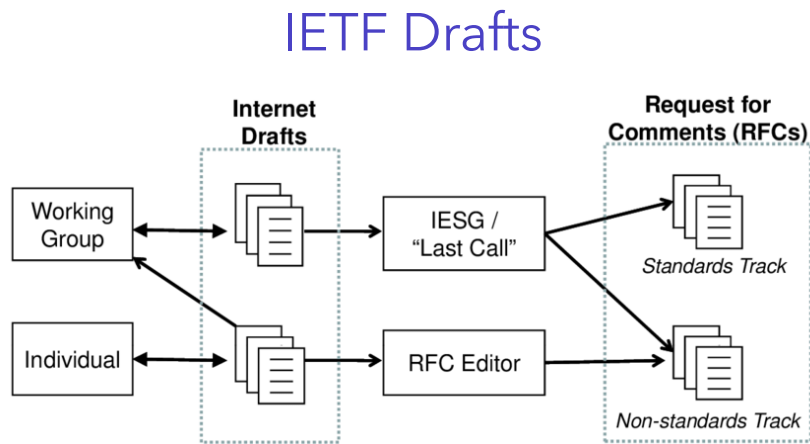


Internet of Things
(IEEE-IETF)



Video in your
Web browser
(W3C-IETF)

IETF Mission - guided by IESG (TMT)



Simcoe, Waguespack, Smith, & Rotman (2009)

RFC 3935: Mission of IETF

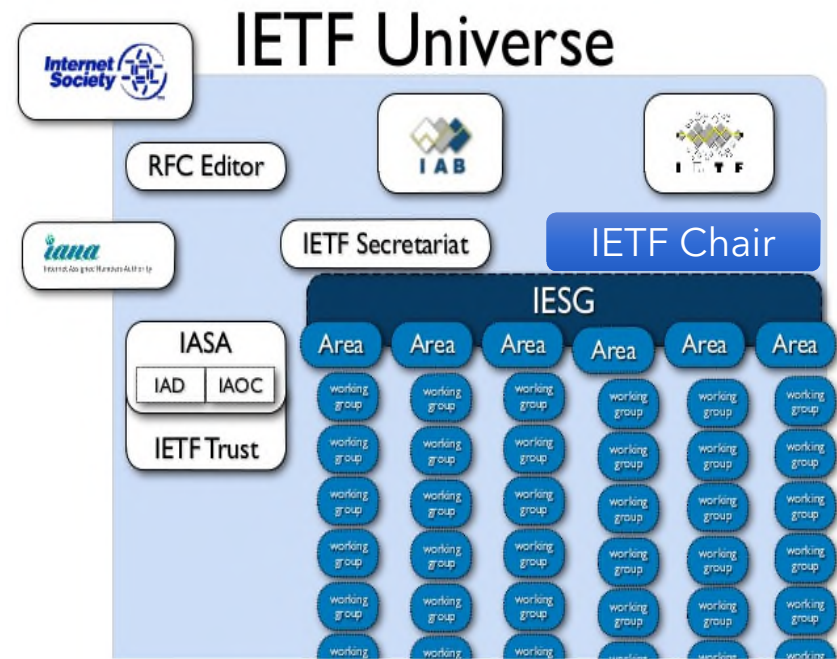
*"Its mission is to produce high quality, relevant **technical and engineering documents** that influence the way people design, use, and manage the Internet in such a way as to make the Internet work better. These documents include protocol standards, best current practices, and informational documents of various kinds."*

All Decisions made by "rough consensus"

Rough consensus and running code We make standards based on the combined engineering judgment of our participants and our real-world experience in implementing and deploying our specifications.

Consensus Decision-Making in IESG TMT in IETF

Did Leaders in the IETF make it successful?



IETF
Chair 7



IETF
Chair 8

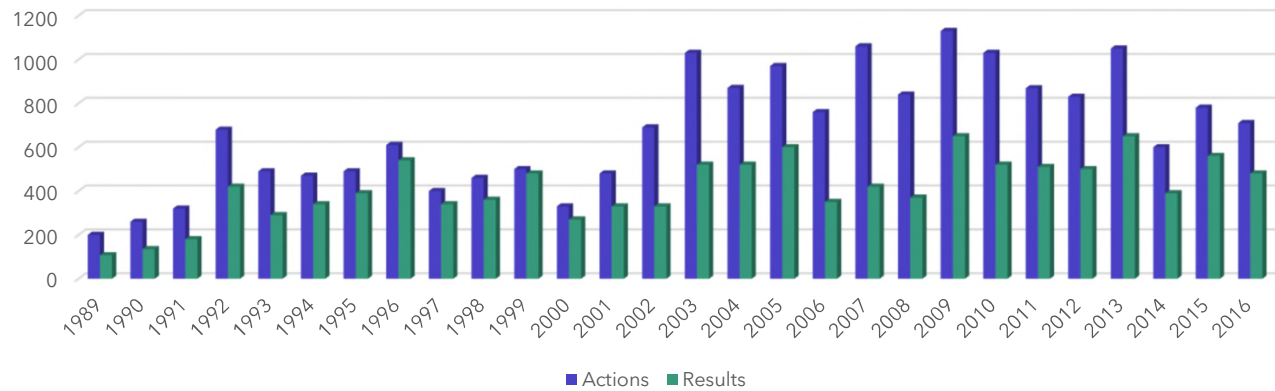


IETF
Chair 9

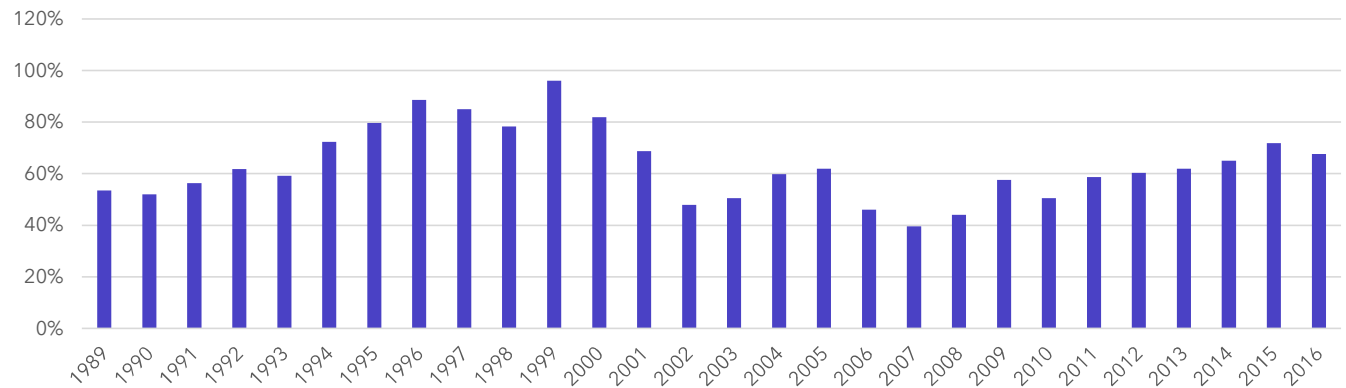
IESG Decisions Discussed vs Results

Consensus Decision-Making in Internet Standards (Dr. Susan Hares)

IESG - Decisions versus Results Raw Count (based on 10% analysis)

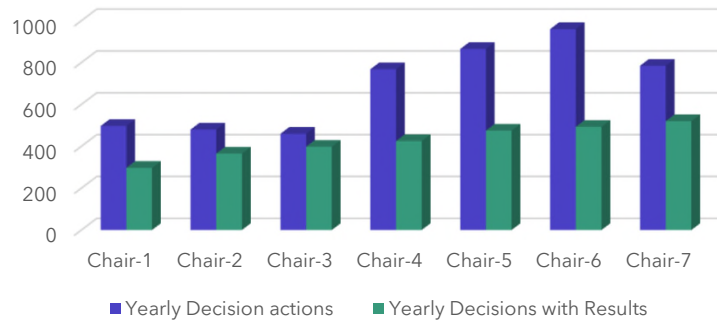


% IESG Decision causing Results

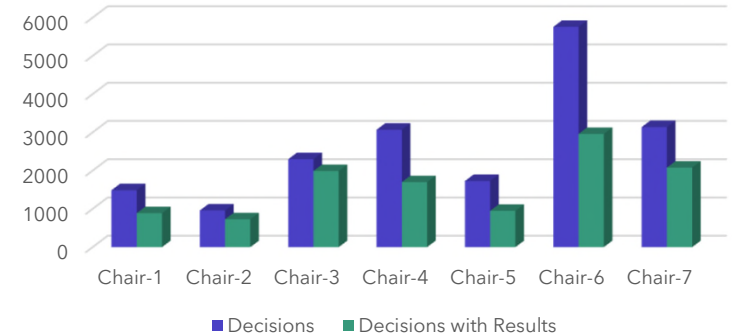


IESG Decisions Discussed vs Results - Per IETF chair

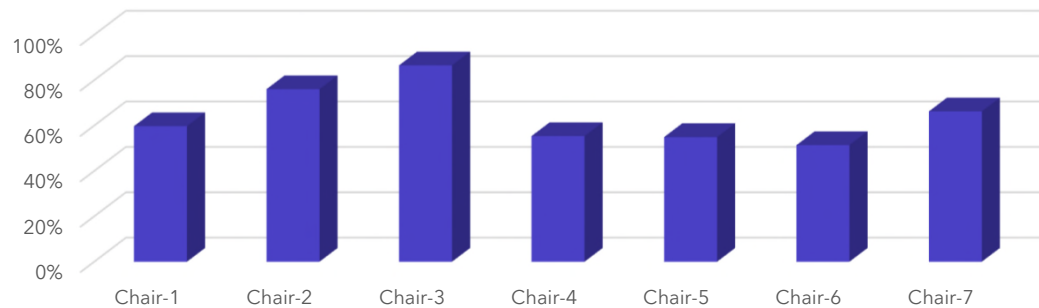
Average Yearly
Decision versus Decisions with Results



Results versus Decisions
for all IESG led by IETF Chair



IETF Chair tenure
% Decision causing Results



3 Phase Mixed Mode Study

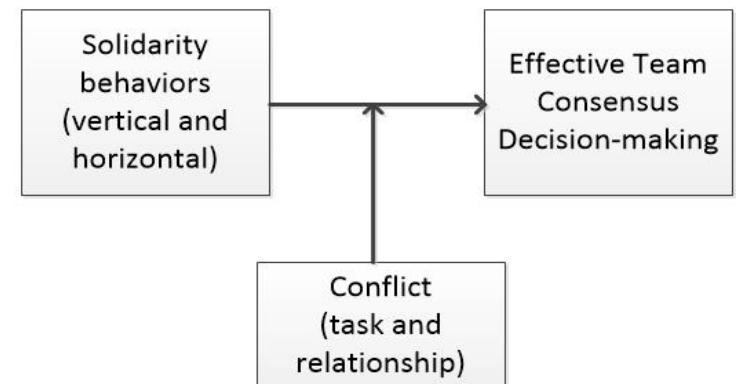
Phase 1



Phase 2



Phase 3



What Predicts Effective Decision-making

Leadership theories for antecedents

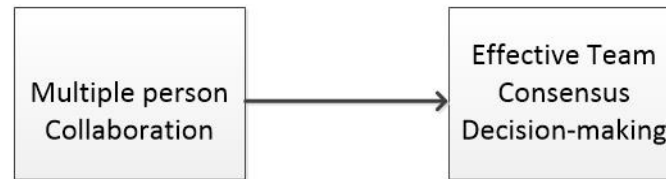
- **Collaborative and reciprocal leadership:** “more adaptable” when “no one person has the solution to a multi-faceted problem” (Allen and co-authors (2010))
- **Solidarity** - An individual who contributes more effort toward a group or person has greater solidarity (Hetcher (1987)).
- **OCB** - “discretionary” efforts outside of their normal roles indirectly “or explicitly recognized by the formal reward system, that in the aggregate, promote organizational goals”. (Organ, 1997)
- **Conflict** - task and relationship ((Jenn, 1995, 1997), (Jehn and Chatman, 2000))
- **Task interdependence** - the extent to which members rely on others to complete their jobs

Research on IETF Processes

- **ICT impact:**
 - Gençer, 2012 - Most actors in software and hardware embrace open standards” so delays in standards result in delays in new ICT products.
 - McQuistin et al. (2021) - Deployment of RFCs
- **WG mail list review** -
 - Protocol Adoption - Nikkhah, Mangal, Dovrolis, and Guérin (2017)
 - Activities on Mail list + Social Media - Niedermayer, et al. (2017)
 - Collaboration on QUIC (Web) Protocols for [20 years) Welzl, et al. (2021)
- **Standard publication process:**
 - Simcoe (2007, 2013) Individual “draft” document to published standard
 - Impact of IPR, who participates
 - IESG review in this process is “**fixed value**”

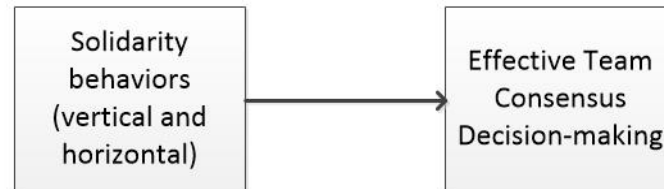
Models

Phase 1



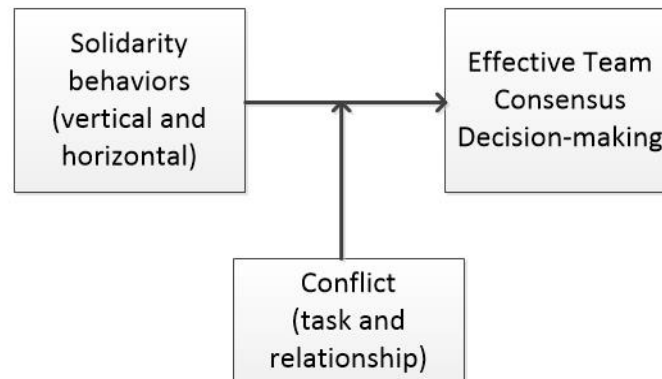
H1: An increase in multiple person discussions will increase the effectiveness of consensus decision made in team consensus decision-making

Phase 2



H1: An increase in solidarity will increase the effectiveness of consensus decisions made in team consensus decision-making

Phase 3



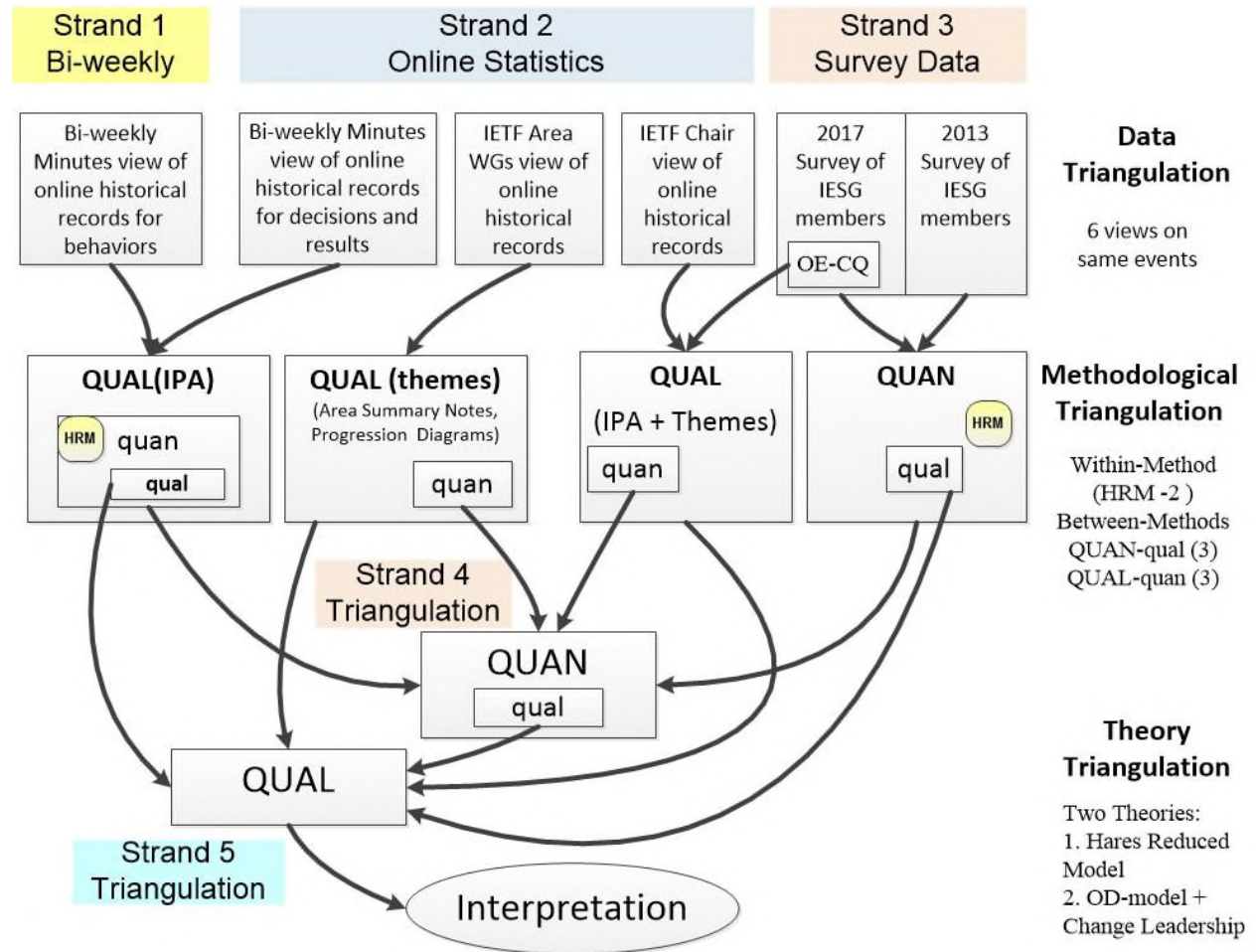
H1: An increase in solidarity will increase the effectiveness of consensus decision made in team consensus decision-making

H2: Controlling for task interdependence an increase in solidarity moderated by conflict will increase the effectiveness of consensus decisions made in team consensus decision-making

Three Phases

	Phase 1 (2012)	Phase 2 (2013)	Phase 3 ('17-'21)
Strands	Exploratory (QUAL→ quan)	Explanatory (QUAN→ qual)	Concurrent triangulation
Theory	Allen & co-authors: Collaborative and reciprocal leaders	Hares Model Solidarity Control: TI	Hares Model Solidarity, Conflict Control: TI
Alternate Theory	Fielder's LPC (Least Preferred Coworker)	Hares Model with OCB replaces solidarity	Hares Model with OCB replaces solidarity
Data	IPA analysis of IESG formal minutes: 5 per year 2003, 2006, 2011	Survey with solidarity, OCB, TI, and self-reported Effectiveness	IESG Minutes 10% 1991-2016 Online WG, Online Chair 2 Surveys ('13, '17)
Analysis	Quantitative: Theme counts totals behavior (multiple person, dyad) , decisions	HRM with IETF totals + perceived totals per year	HRM (cohort mean) Solidarity predicts Better than OCB
Interviews	Post-analysis 3 chairs	Post Analysis 8 IESG members	Dissertation online for IESG members prior to publication

Phase 3 - historio- metric



Survey Instrument [Themes for IPA]

Behavior Instrument	Reliability (Cronbach Alpha)		
	Previous Research	2013 Survey	2017 Survey
Survey responses [2013: 28 questions behaviors + 5 effective decision-making [2017: added 6 conflict behaviors + 2 open-ended conflict]	100s	41 IESG (46%) 94 slots (41%) 25 years	25 IESG (26%) 88 slots (26%) 28 years
Solidarity instrument from Koster and Sanders (2006) (10 horizontal, 10 vertical)	HS: 0.85-0.95 VS: 0.78-0.89	0.90	0.91
OCB from Wayne & Cordeiro (2003) Generalized Compliance (3) Altruism (2)	0.70 0.70	0.70 0.76	0.80
TI from Van Der Vegt et al. (1998) (3 questions)	0.81	0.85	0.89
Jehn's (1995) Intragroup Conflict scale (task (3), relationship (3))	0.72 - 0.91	Not on Survey	0.88
Self-Reported Effectiveness		2013 survey	2017 survey
IESG Perceived Effectiveness (PR) (Documents (2), WG (1), Admin (1))	no history	0.85	0.79

Correlation and HRM results

10% Minutes 1991-2016	100% Minutes 2015-2016	2013 Survey Cohort mean	2017 Survey Cohort mean	2017 Survey All Responses
<p>Correlations:</p> <p>S-OCB: 0.902</p> <p>S-Results: 0.845</p> <p>C-Results: 0.409</p> <p>TI-Results: 0.738</p> <p>OCB-Results: 0.784</p> <p>HRM:</p> <p>Solidarity predicts 62-73% of results</p> <p>OCB predicts 61%</p>	<p>Correlations:</p> <p>S-OCB: 0.919</p> <p>S-Results: 0.804</p> <p>C-Results: 0.545</p> <p>TI-Results: 0.798</p> <p>OCB-Results: 0.855</p> <p>HRM:</p> <p>Solidarity predicts 65% ('15), 44% ('16)</p> <p>OCB predicts 73% ('15), 71% ('16)</p>	<p>Correlations:</p> <p>S-Results: 0.517</p> <p>PR-Results: 0.451</p> <p>S-PR: 0.531</p> <p>HRM:</p> <p>Solidarity predicts 22-26%</p>	<p>Correlations:</p> <p>S-OCB: 0.637</p> <p>S-PR: 0.713</p> <p>C-PR: -0.479</p> <p>OCB and S did not correlate to results</p> <p>HRM:</p> <p>Solidarity predicts 51-58% of perceived results</p>	<p>Correlations:</p> <p>S-OCB: 0.637</p> <p>S-PR: 0.706</p> <p>C-PR: -0.509</p> <p>OCB and S did not correlate to results</p> <p>HRM:</p> <p>Solidarity predicts 51-58% of perceived results</p>

3 Conclusions

1. Quantity of quality data matters
2. Triangulation is critical
3. Solidarity appears to be better than OCB for IESG

**Still in the mountains of data
Going from 10% to 100%**



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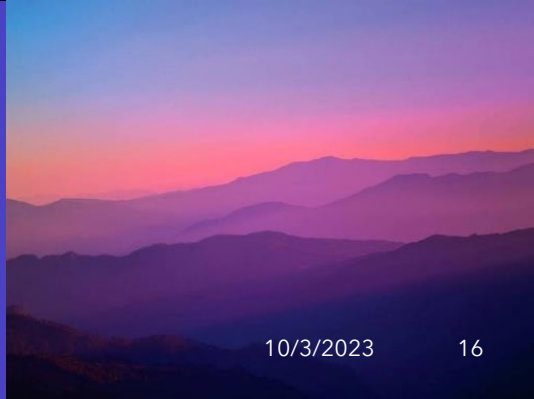
Dissertation:
Solidarity as an Antecedent of Consensus Decision-Making: A Mixed Mode Study
(PhD Organizational Leadership)

LinkedIn: Sue Hares

Thank you

Dr. Corné Bekker – dissertation chair and committee (Dr. Cabanda and Dr. Gomez)

And your feedback!



Historical data collected in Phase 3

	IESG Minutes	WG information	IETF Chairs
Minutes	Formal Minutes Narrative Minutes	Online IETF WG information	Online IETF proceedings
Files	599 formal ('91-'16) 246 Narrative ('05-'16) 78 BOF	768 WG 281 BOFS [1049 Pages]	95 meetings ('89-'17) 110 meetings ('89-'21) (IESG 1989-2020)
Sample	Formal: 78 (26 years) (52 meetings + 12 BOF) Narrative: 35 (2005-2016) (23 meetings + 12 BOFs)	100% WG pages read	100% of Plenary presentations with IETF chair presentations
Decisions	10% - 1853 100%: 1605 (2015: 820, 2016: 785)	Content Analysis Per Area standards progression	IETF chairs were surveyed 2013: 4 chairs (16 yrs) 2017: 4 chairs (17 yrs)
IBA -	10% - 21643 100%: 17543 (2015: 8816, 2016: 8721) [39 questions]	WG looked at the progression of documents	Look at Chair's environment via SWOT, Goals versus Accomplishments, Conflict

Total IPA analysis = IBA * 39 questions = 1.5 million items

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