

DIGITAL 2025

REVISITING PROCESS VIRTUALIZATION:

A SYSTEMATIC REVIEW OF HOW COLLABORATION TOOLS SUPPORT SOCIAL PRESENCE AND SITUATION AWARENESS

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AGENDA

1

AUTHOR INTRODUCTION

2

CONTRIBUTION

3

BACKGROUND

4

METHOD

5

FINDINGS

6

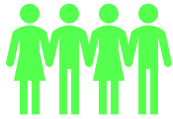
CONCLUSION & FUTURE WORK

- Professor of digital transformation at IU International University.
- Specialized in the strategic and organizational integration of digital transformation within companies → particularly its influence on contemporary work environments.
- Many years of experience researching at various universities.
- Managing and consulting on digitalization projects.

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Advances Process Virtualization Theory (PVT)



Integrates social presence and situation awareness



Systematic review of 32 studies



Contribution to digital transformation discourse

1	AUTHOR INTRODUCTION
2	CONTRIBUTION
3	BACKGROUND
4	METHOD
5	FINDINGS
6	CONCLUSION & FUTURE WORK

BACKGROUND: VIRTUAL TEAMS

Definition: digitally connected, geographically dispersed teams [4].

Shift to hybrid and remote work models [5].

Increasingly blurred boundaries [6].

Relational and coordination challenges.

Fig 1: Virtual cooperation.



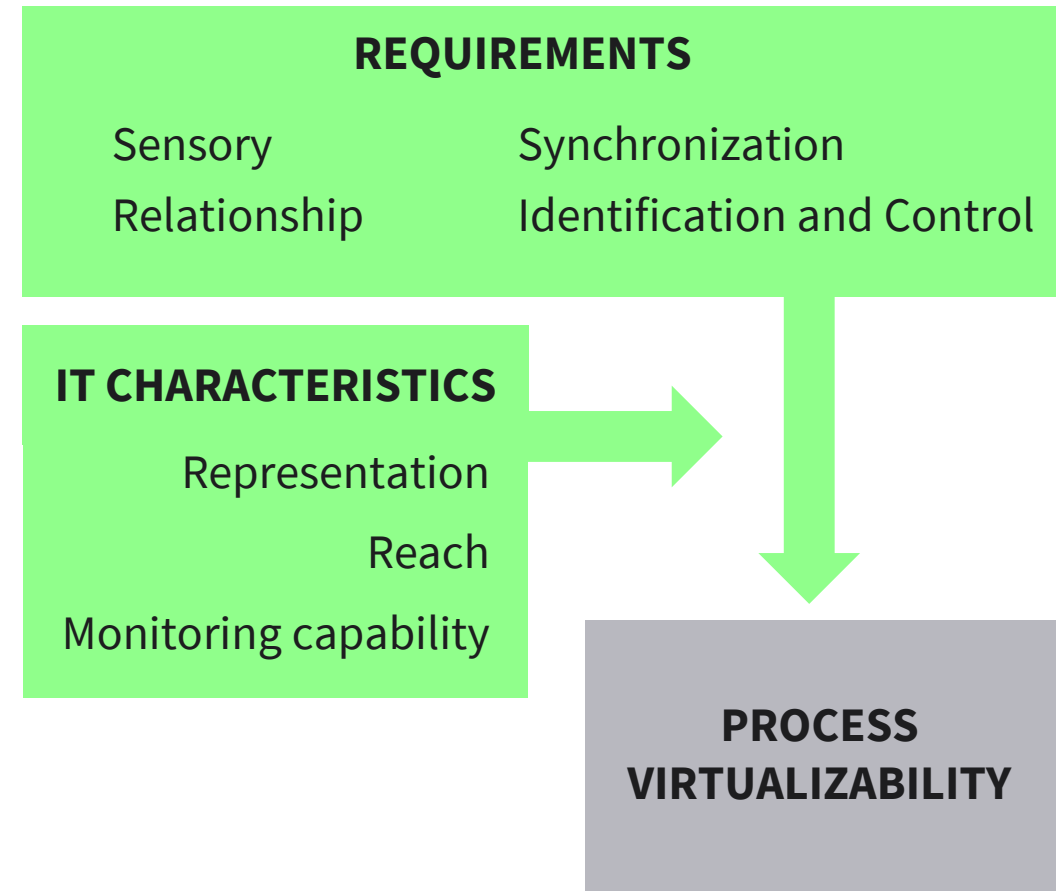
BACKGROUND: PROCESS VIRTUALIZATION THEORY

Origin: Overby [2].

Process virtualizability requirements: sensory, relationship, synchronization, identification and control.

IT characteristics: representation, reach, monitoring.

Fig. 2: Process Virtualization Theory.



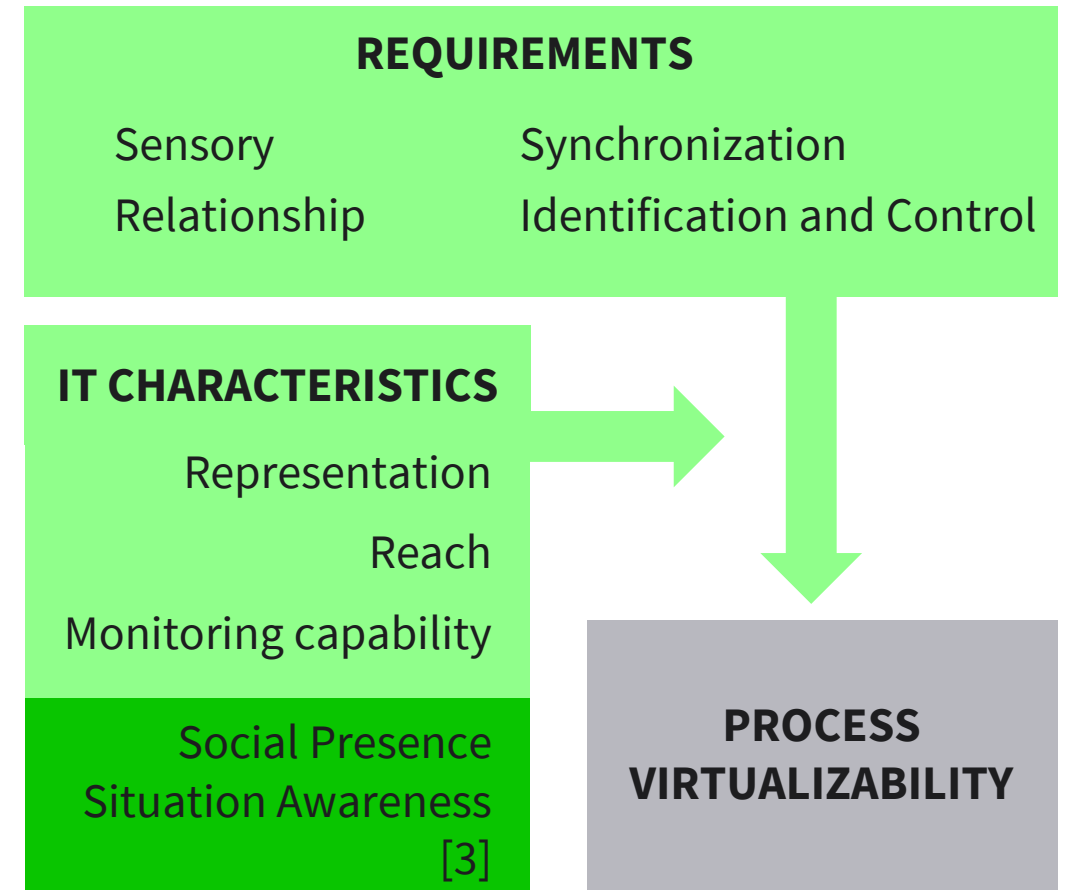
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Social presence = capacity of an information technology (IT) medium to foster a felt sense of “being with” another in virtual interaction [11].

Perceived psychological and emotional connection among interactants shapes both interaction quality and outcome effectiveness [12].

Richer transmission of social cues (e.g., vocal tone, facial expression, immediacy markers) heightens social presence.

BACKGROUND: SITUATION AWARENESS

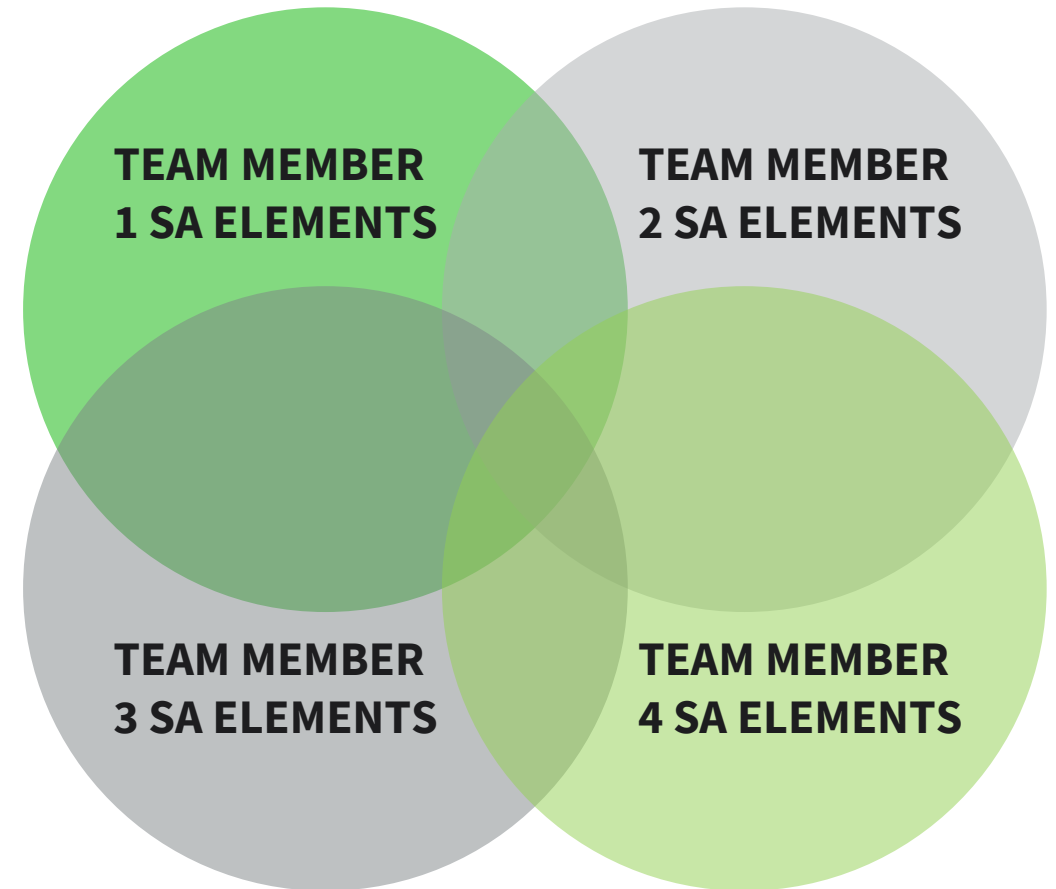
Knowing what is going on [13].

Team-level perception and prediction.

Shared understanding in dynamic contexts.

Crucial for coordination.

Fig. 3: Team situation awareness.

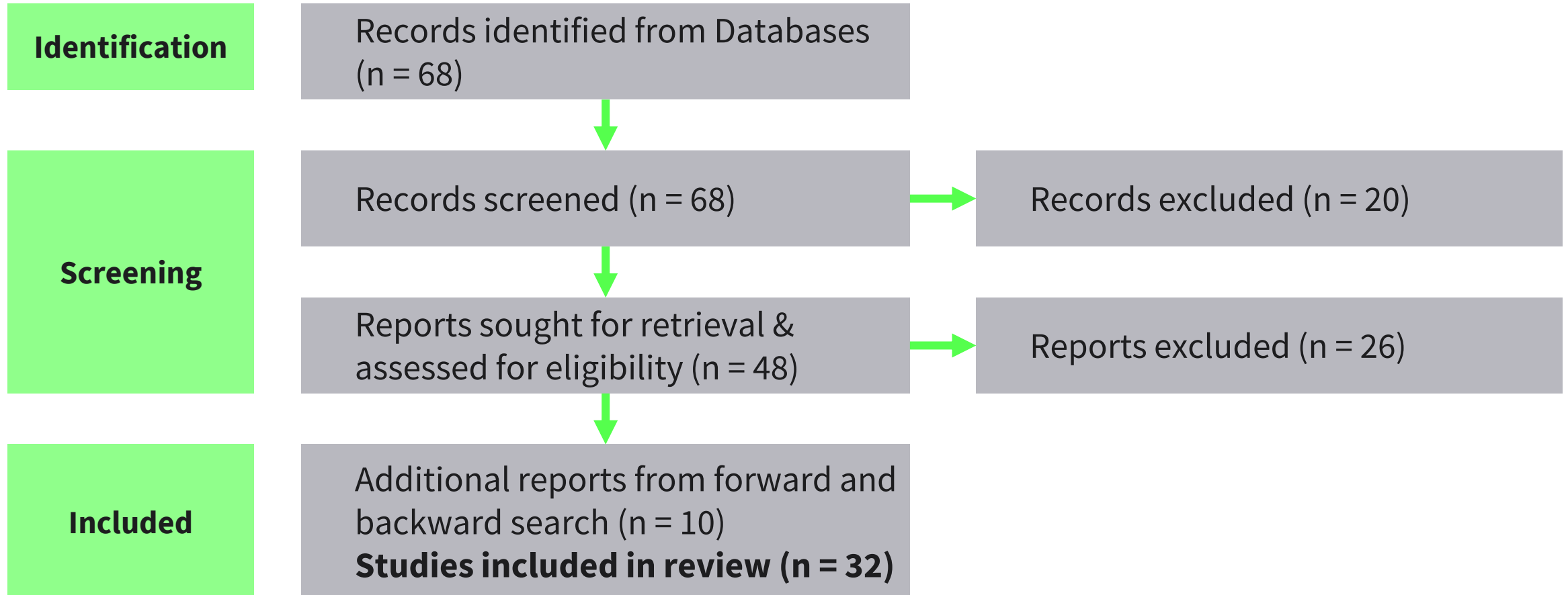


RQ1: In what ways do digital collaboration tools foster social presence in remote settings?

RQ2: In what ways do digital collaboration tools enhance situation awareness in remote teams?

METHOD

Fig. 4: Team situation awareness.



	Classification				Concepts					
Article	Research Design		Tool-Types mentioned		Social Presence			Situation Awareness		Trust
					Interpersonal Relationship/ Team Cohesion	Collaboration	Community/ belonging	Knowledge exchange	Informal Communication	
[14]	REV		Vid, Pl	x		x		x	x	
[19]	REV + CON		VR,Vid,Ch	x	x	x			x	
[20]	CON		Vid, Pl	x	x	x	x	x	x	
[21]	CON		Pl	x		x				
[22]	Q		VR, Vid, Ch, Pl	x	x	x		x		
[23]	CON		Pl	x		x		x		
[24]	QU		Vid, Ch	x		x	x		x	
[25]	REV		Pl, Em	x		x	x	x	x	
[26]	Q		Vid, Ch, Em	x				x		
[27]	Q		Pl	x	x	x		x		
[28]	QA		ND	x	x	x			x	
[29]	REV		Vid, Ch, Pl, Em					x	x	
[30]	QM		Ch, NT	x				x		
[31]	REV		VR, Vid, Ch, Pl, Em	x	x		x		x	
[32]	Q		VD	x				x		
[33]	Q		Vid, Ch, Em, Ph	x		x		x		
[34]	Q		VR, Vid, Ch, Em	x			x	x	x	
[35]	Q		Vid, PL	x	x		x		x	
[36]	QU		Vid, Ch, Pl, Em, Ph				x		x	
[37]	QU		Em, Ph, ND	x				x	x	
[38]	REV + Q		Vid, Em	x	x	x		x	x	
[39]	REV + QU		Vid, Ch, Pl, Em	x					x	
[40]	RE		VR, Vid, Ch, Pl, Em	x	x	x		x	x	
[41]	QU		Vid, Ch, Pl,	x	x			x		
[42]	CON		Vid, Ch, Pl, Em, Ph	x	x				x	
[43]	QM		ND		x	x				
[44]	Q + CON		Vid, Ch					x		
[45]	CON		Vid, Ch, Pl, Em, Ph	x	x	x		x	x	
[46]	Q		Vid, Ch, Pl, Em, Ph	x	x		x		x	
[47]	QU		Vid, Ch, Pl		x	x	x			
[48]	CON		Pl						x	
[49]	Q		Vid, Ch, Pl, Ph	x	x				x	
Σ (Research Design/ Tool-Types/Segments with concept)	Q = 10 CON = 8 REV = 7	QU = 6 QM = 2 EXP = 0	Vid = 22 Pl = 18 Em = 13 Ch= 15 Ph = 7 VR = 5 ND = 3	85	28	36	16	106	53	

Classification legend:
 Research Design: Q = Qualitative, QU = Quantitative, QM = Mixed, EXP = Experiment, REV = Review/Meta-Analysis, CON = Conceptual/Design Science
 Tool-Type: VR = VR, Vid = Video, Ch = Chat, Pl = Platform-Suite, Em = e-mail, Ph = Phone, ND = not defined

FINDINGS: SOCIAL PRESENCE

Synchronous tools (e.g., video conferencing) [19][20].

Informal interactions and virtual rituals [23][26].

Personalized introductions [21].

Multimodal strategies [24][29][30].

Fig. 4: Synchronous tools.



FINDINGS: SITUATION AWARENESS

Informal and structured knowledge sharing [19][36].

Transparency through shared platforms [37].

Psychological safety fosters openness [36].

Enables coordination and mutual support [19][36].

Fig. 5: Structured knowledge sharing



FINDINGS: TRUST

Emerges from social presence and awareness.

Media richness and reciprocity [42].

Leadership and fairness [14][38][45].

Trust as cohesion enabler.

Fig. 5: Authentic interactions.



Collaboration tools replicate relational dynamics.

Hybrid models enhance resilience.

Need for configurable, trust-enhancing tools.

Call for experimental and cross-cultural studies.

Thank you for your interest and attention.

Questions or comments welcome.

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