

Strategic IT management - 37E00200

Virtual organizing and cloud computing

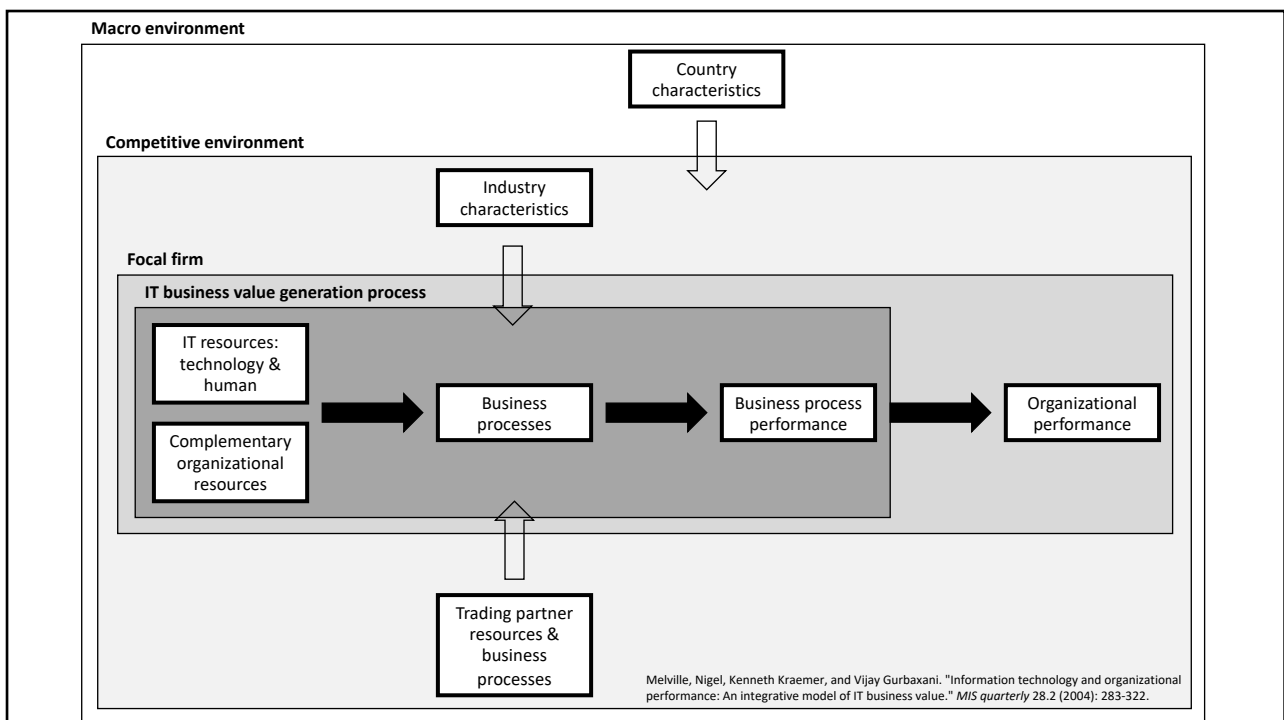
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Cloud computing

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What is Cloud?

- The evolution of a service-based perspective on computing based on innovations in shared computing provision that improve simplicity, scalability, and efficiency.

Willcocks, Venters & Whitley (2014) "Moving to the Cloud Corporation"

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Essential properties of cloud

Customer side (user)

1. On-demand service
 - Measured service/pay-per-use
2. Dynamically scalable resources
3. Relatively small upfront investment, shift from CapEx to OpEx

Supplier side (service provider)

1. Provisioning from a shared pool of configurable computing resources

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Properties of cloud-based accounting information systems

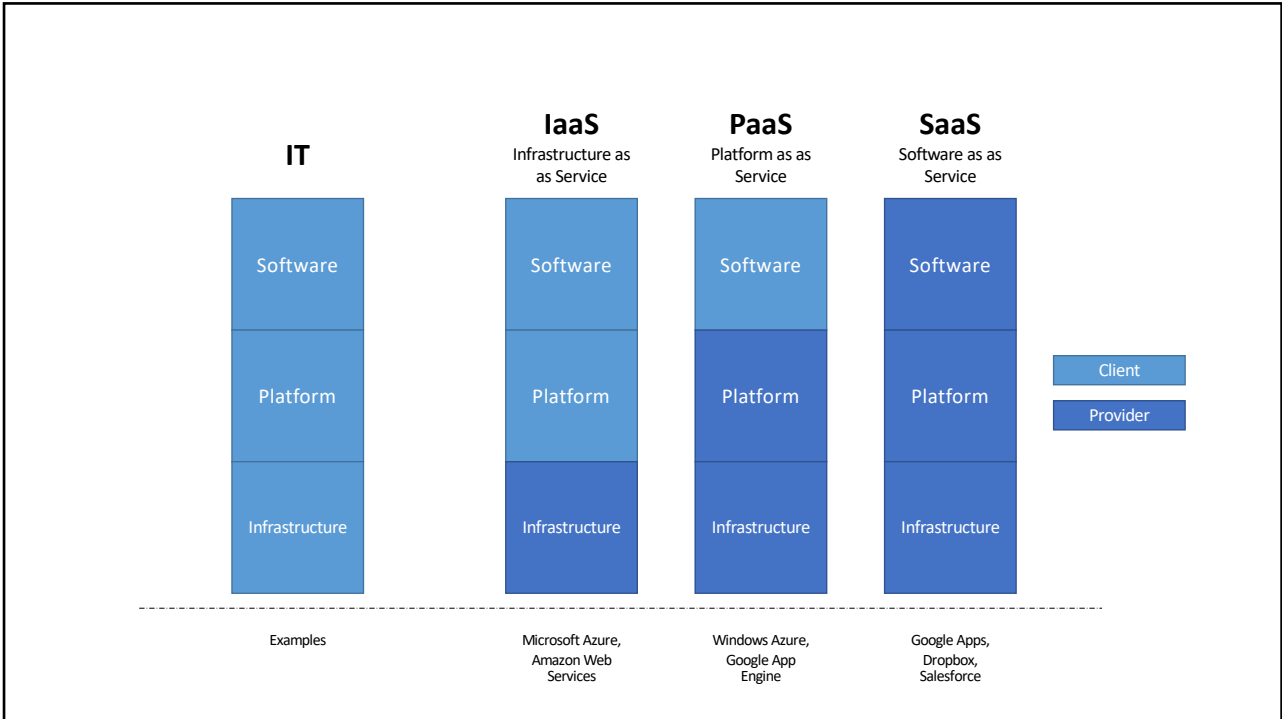
Table 1
Properties of cloud-based AIS.^a

Property	Cloud-based AIS	Traditional workstation AIS	References
On-demand service	Client company can provision computing capabilities such as network storage as needed, adding to the scalability of AIS.	Client company is restricted to the product features that are pre-determined in the initial contract/license. Additional functionalities and updates may be available but typically an upgrade to a different version of software is required.	
Availability over network	AIS is available over the network and accessed through standard mechanisms that promote access and use over heterogenous client platforms (such as mobile phones, tablets, and laptops).	AIS is only available through the workstations where installed.	Benlian and Hess (2011); Chen and Wu (2012); Mell and Grance (2011); Schneider and Sunyaev (2016)
Provisioning	AIS provider's computing resources are pooled to serve multiple client companies using a multi-tenant model.	Client company takes responsibility of ensuring adequate computing resources to use the AIS on in-house workstations.	
Rapid elasticity	AIS provider's capabilities are elastically provisioned and released, e.g. updates to the AIS are often provided automatically.	Client company makes decisions on updates and additional features.	
Measured service	Resource usage can be monitored, controlled and reported, providing transparency for both the AIS provider and client company.	Client company may set up practices to monitor efficient use of traditional AIS.	

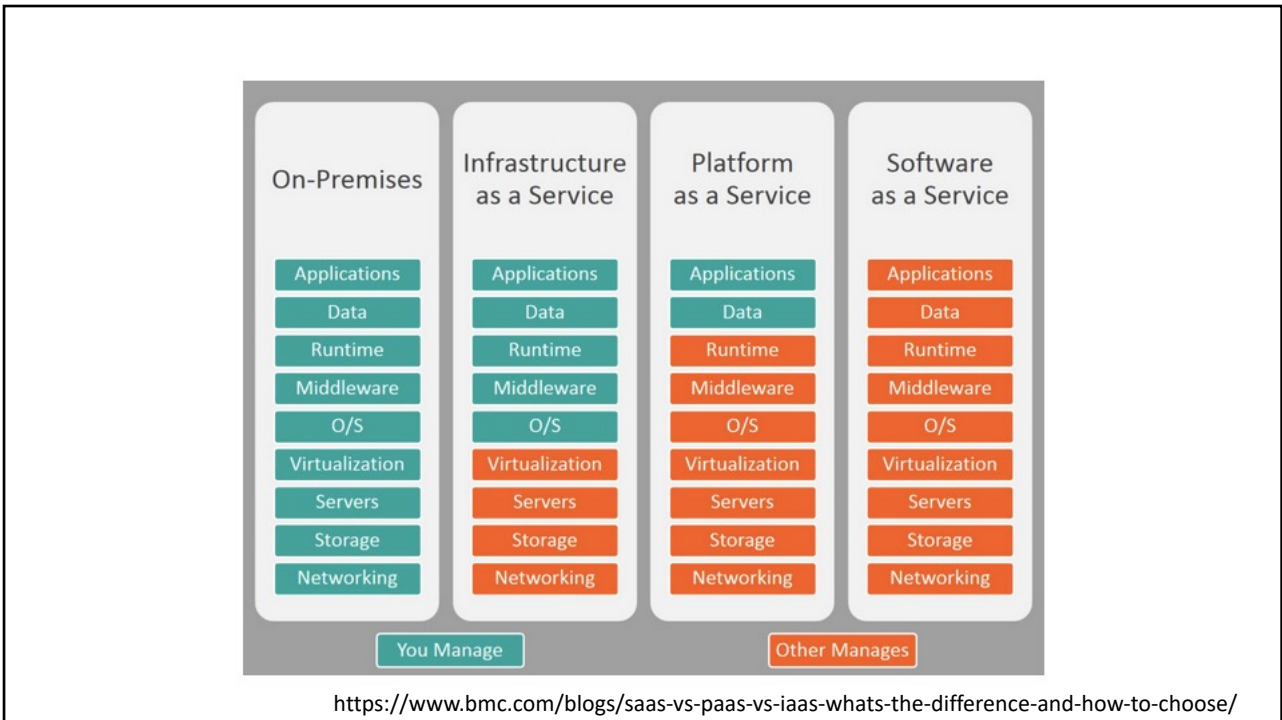
^a We acknowledge that some traditional workstation AIS may exhibit features similar to cloud-based AIS (e.g. remote online access in a hosted client-server architecture). In our context, however, we consider all five properties as necessary conditions to defining cloud-based AIS, i.e. we define cloud-based AIS as systems that exhibit all the five listed features. Examples of such systems are Xero and QuickBooks Online. Such a tight definition allows us to draw clear boundaries between traditional and cloud-based AIS.

Asatiani, A., Apte, U., Penttinen, E., Ronkko, M. & Saarinen, T. (2019) Impact of accounting process characteristics on accounting outsourcing - Comparison of users and non-users of cloud-based accounting information systems. *International Journal of Accounting Information Systems*, forthcoming

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IT outsourcing vs. Cloud computing

- IT outsourcing is an act of delegating some or all of the IT-related activities to external providers
- IT outsourcing is the traditional way for organizations to transition from capital expenditure to operating expenditure
- Cloud computing is a more recent model for provisioning and consuming IT capabilities on a need and pay by use basis (Dhar 2012)
- Similar to IT outsourcing, the main motivation for cloud computing lies in the transition from CapEx to OpEx

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Cloud adoption and IT outsourcing (ITO)

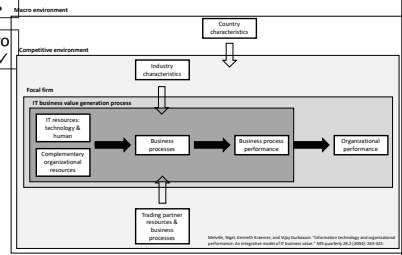
	CC	ITO
Client		
Industry (M)	✓	✓
Strategic vulnerability (-)	•	•
Top management support (++)	•	✓
Individual		
Attitude toward outsourcing (++)	•	•
Vendor		
Service capability (++)	✓	•

	CC	ITO
Asset		
Cost savings (+)	✓	✓
Cost uncertainty (-)	•	•
Measurement problems (-)	•	✓
Strategic importance (-)	✓	✓
Technical complexity (++)	•	✓
Technology		
Access to specialized resources (++)	✓	✓
Availability risks (-)	✓	•
Flexibility (++)	✓	•
Focus on core competencies (++)	•	✓
Loss of control (-)	•	•
Perceived complexity (-)	✓	•
Quality improvements (++)	•	•
Reduced time to market (++)	✓	•
Security risks (-)	✓	•
Environment		
Market maturity (+)	✓	✓

Legend:
 (++) More than 80% of the evidence is positively significant
 (+) Between 60% and 80% of the evidence is positively significant
 (-) More than 80% of the evidence is negatively significant
 (-) Between 60% and 80% of the evidence is negatively significant
 M Between 60% and 80% of the evidence is significant but non-directional (categorical relationship)
 ✓ Factor is examined at least five times for the subsample
 • Factor is examined less than five times for the subsample

Figure 1 Determinant factors with consistent empirical evidence regarding the influence on IT sourcing decisions.

Schneider & Sunyaev (2016)



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Cloud and ITO similarities

	IT outsourcing	Cloud computing
Cost reduction	Reduce cost using third party vendors	Reduce cost using cloud services
Implementation times	Quick implementation	Quick implementation
Scalability	Global scale	Global scale
Application delivery	Application delivered by a third party	Cloud-based application delivered by a provider
Security risk	Application security is handled by a third party	Application security is handled by a cloud provider
Backup and recovery	Backup systems, disaster recovery and high availability are supported	Backup systems, disaster recovery and high availability are supported

Dhar, S.(2012), Schneider & Sunyaev (2016)

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Cloud VS ITO differences part 1

	IT outsourcing	Cloud computing
Control	Giving up control over IT-related decisions, business processes and services to external provider	Sourcing building blocks of IT while retaining control over business decisions, and maintaining lower commitment
Investment	Initial upfront costs required	No upfront costs are required
Ownership	Varies based on the contract	All software and infrastructure is owned by provider
Service delivery	Not always on demand	Always on demand
Flexibility	Capacity planning required in advance	Resources can be scaled on demand
Cost structure	Potential hidden costs	Transparent costs
Customization	High customization	No customization
Management	Project management, offshore coordination and governance required	Less management is required

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Cloud VS ITO differences part 2

	IT outsourcing	Cloud computing
Value-added services	Outsourcing vendors can offer consulting services	Value-added services tend to be out of scope of cloud services
Contracts	Thorough SLA, specifying service delivery, resource allocation, data location, security and privacy measures	Standard contracts with no specific provisions on compliance, business continuity, security and privacy
Contract length	Long contracts	Short contracts
IT environment	Custom development environment, based on preselected platform/infrastructure	Predetermined applications, platforms and infrastructure
Key client	IT department	SaaS – business units IaaS/PaaS – IT department

Dhar, S.(2012), Schneider & Sunyaev (2016)

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Virtual organizing

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Disappearing organizational borders

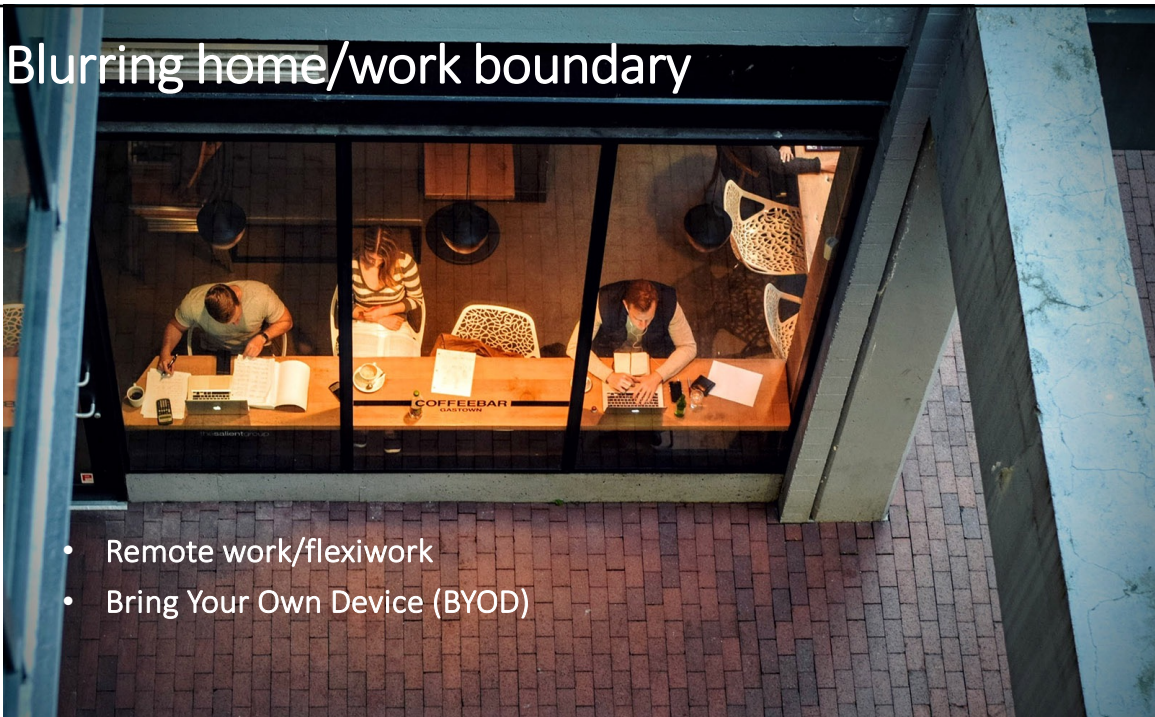
- Blurred line between “work” and “non-work”
- Flexibility in sharing access with others
- Collaboration with stakeholders



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Blurring home/work boundary

- Remote work/flexiwork
- Bring Your Own Device (BYOD)



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Share your thoughts

- How do you see the trend towards cloud-based information systems coupled with the idea of virtual organizations
 - What are the advantages and drawbacks?
 - Do you foresee any conflicts?
 - How does this development impact work processes?

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Why work virtually? (Organizations)

- Attract global talent
- Cost cutting
 - Office-related costs
 - Lower salaries elsewhere
- Work around the clock
- Higher employee productivity
- External shock (e.g., global pandemic)

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Why work virtually? (Individuals)

- Work from the comfort of home
- Flexible work schedule
- No commuting
- Possibly higher compensation
- High independence in work
- Higher productivity and focus

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Defining virtuality

- Dichotomous view
- Degree of virtuality view
- Boundary /discontinuity view

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Boundary view

- Geography
- Time zones
- Culture
- Work practices
- Technology

Chudoba et al. (2005) How Virtual are We? Measuring and Understanding Its Impact in a Global Organization

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Geography (physical boundary)

- Miscommunication
- Lag in communication/collaborative work
- Communication initiation problem
- Collaborating with people you have never met
- Tacit knowledge sharing
- Working from inconvenient locations (e.g., airports, hotels)

Chudoba et al. (2005) How Virtual are We? Measuring and Understanding Its Impact in a Global Organization

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Time zones

- Coordinating activities across time zones
- Difficulties to do collaborative/interdependent work

Chudoba et al. (2005) How Virtual are We? Measuring and Understanding Its Impact in a Global Organization

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Culture

- Differences in cultural values
- Differences in approach to schedules, work etiquette, decision-making
- Language-related issues
- Differences in corporate culture
- Difficulties in propagating corporate culture

Chudoba et al. (2005) How Virtual are We? Measuring and Understanding Its Impact in a Global Organization

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Work practices

- Differences in perspectives on work/project
- Differences in understanding teamwork
- Differences in tools/approaches
- Differences in understanding concepts (e.g., project review)

Chudoba et al. (2005) How Virtual are We? Measuring and Understanding Its Impact in a Global Organization

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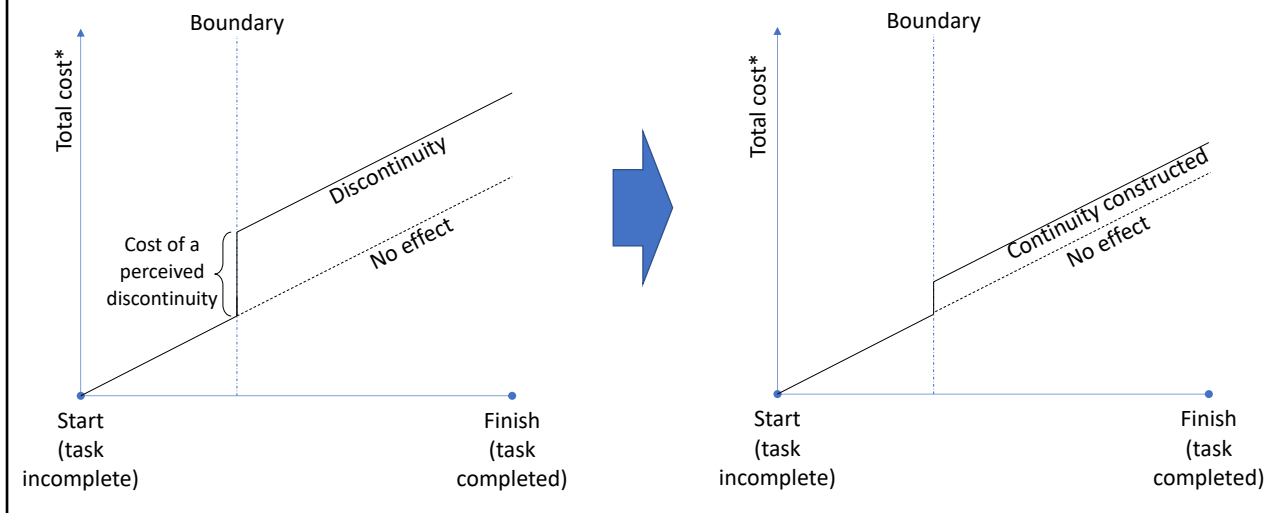
Technology

- Access to hardware and software
- Access to high-speed broadband

Chudoba et al. (2005) How Virtual are We? Measuring and Understanding Its Impact in a Global Organization

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Virtual work discontinuities

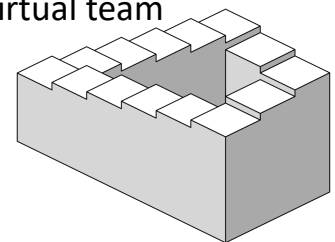


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Paradoxes of virtual work

- Virtual teams require physical presence
- Flexibility of virtual work is aided by structure
- Interdependent work in virtual teams is accomplished by members' independent contributions
- Task-oriented virtual teamwork succeeds through social interactions
- Mistrust is instrumental to establishing trust among virtual team members

Dube & Robey (2008) Surviving the Paradoxes of Virtual Teamwork



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Table 2. Paradoxes of virtual teamwork and coping strategies

Paradox (frequency of mention)	Description	Coping strategies
P1 Virtual teams require physical presence (100).	Virtual teams are geographically distributed, and members work independently of time and space. Yet virtual teams require the physical presence of other members.	<ul style="list-style-type: none"> • Hold a mandatory face-to-face kick-off meeting. • Match media with tasks. • Keep the rhythm (through ICTs or face-to-face meetings). • Learn to develop relationships through ICTs.
P2 Flexibility of virtual teamwork is aided by structure (9).	Virtual teamwork is flexible. Yet flexibility is supported by structural mechanisms that coordinate team efforts.	<ul style="list-style-type: none"> • Define clear objectives and prepare detailed plans, but maintain flexibility. • Maintain a shared team calendar using ICTs. • Standardize communication and documentation processes, but leave open the possibility of adapting them. • Select team members carefully.
P3 Interdependent work in virtual teams is accomplished by members' independent contributions (27).	Teamwork implies interdependence among members towards common goals. Yet most work is divided into subtasks that are actually accomplished by individuals.	<ul style="list-style-type: none"> • Hold face-to-face meetings for critical tasks. • Use ICT to get all members' input. • Establish a collaborative culture.
P4 Task-oriented virtual teamwork succeeds through social interactions (12).	Virtual teams are task-oriented because of their reliance on ICTs. Yet they depend on social interactions to succeed.	<ul style="list-style-type: none"> • Learn to develop relationships through ICTs. • Organize regular face-to-face meetings.
P5 Mistrust is instrumental to establishing trust among virtual team members (16).	Trust is necessary in virtual teams. Yet mistrust is a condition that leads members to establish trustworthiness.	<ul style="list-style-type: none"> • Build trust based on culture/profession/position/experience. • Design team activities. • Implement control mechanisms.

P, paradox; ICTs, information and communication technologies.

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Constructing continuities in virtual organizations (Asatiani & Penttinen 2019)

TABLE 1 Background information on the case firms

	Officecom	Virtcom
Number of Employees (2014)	14	12
Approximate turnover per annum (in € millions)	1	1.7
Accounting information system	CloudAIS (cloud-based)	CloudAIS (cloud-based)
Physical facilities	Office in central Helsinki with flexible work-desks available to employees.	Meeting room in central Helsinki. The purpose of the room is to accommodate client meetings. No workspace available.
Typical employee profile	Young, IT-savvy, and passionate about customer service.	Older, more experienced, with an extensive knowledge of accounting and strong self-organization skills.
Employee virtuality	Flexiworkers	Fixed-site (home) teleworkers
Organizational structure	Hierarchical (management, team leaders, and employees)	Flat, but centrally controlled

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Results

TABLE 3 Summary of interview analysis

Boundaries	Discontinuities Officecom	Discontinuities Virtcom	Continuities Officecom	Continuities Virtcom
Geography	- Professional isolation - Social isolation	- Professional isolation - Social isolation	- Regular face-to-face meetings - Online communication tools	- Online communication tools - Escalation policy
Culture	- Employee integration	- Dissemination of corporate culture - Employee integration	- Regular face-to-face meetings - Online community pages to organize offline events	- Pragmatic company vision - Quarterly offline events
Work organization	- Interdependence - Work coordination	- Communication coordination - Employee contribution measurement	- Organizational hierarchy - Protocol for use of communication tools	- Use of customer feedback
Work practices	- Balance work and life - Productivity management	- Balance work and life	- Work allocation between remote and office work	- Incentivize self-discipline - Central control of workload
Technology	- Availability of IT infrastructure	- Availability of IT infrastructure	- Work allocation between remote and office work - Mobile IT equipment	- Investments in home offices - Developing work routine to fit IT constraints - Full digitalization policy

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Discussion

TABLE 4 Continuity construction approaches in the two case companies

	Officecom	Virtcom
Governance structure	Vertical hierarchy	Centrally controlled flat hierarchy
Role of technology	Complementary to physical presence	Substitutive for physical presence
Communication management	Flexible communication policy	Rigid communication policy
Workflow management	Structured, process-oriented work allocation	Flexible, outcome-oriented work allocation

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Organizational culture in highly virtual work environments – Case Smartly.io

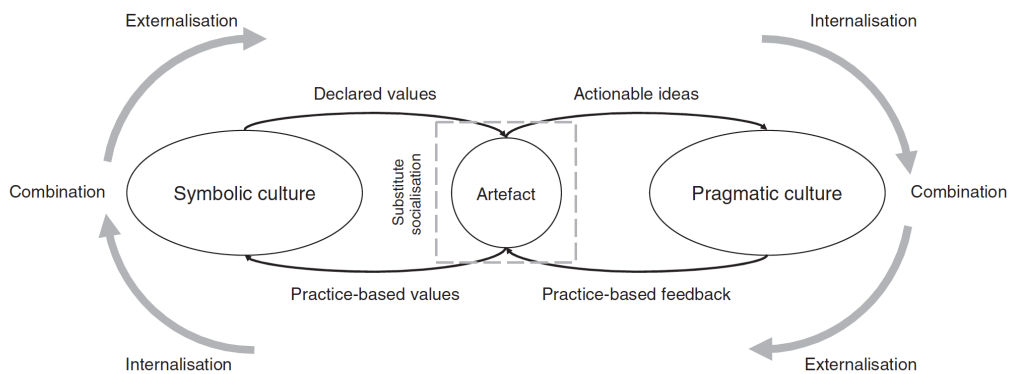


FIGURE 1 Conceptualisation of a highly virtual work environment's socialisation process

Asatiani, A., Hämäläinen, J., Penttinen, E. & Rossi, M. (2021) Constructing Continuity across the Organisational Culture Boundary in a Highly Virtual Work Environment. *Information Systems Journal*, vol. 31, no. 1, pp. 62-93.

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Design principles for culture handbook

- DP1: Create an artefact in a format that is transferable, editable and findable
- DP2: Utilise knowledge visualisation techniques and real-life stories to anchor the artefact to the wider organizational context and thereby support understanding of tacit aspects of organisational culture
- DP3: Make the organisational-culture-explaining artefact's development process participatory

Asatiani, A., Hämäläinen, J., Penttinen, E. & Rossi, M. (2021) Constructing Continuity across the Organisational Culture Boundary in a Highly Virtual Work Environment. *Information Systems Journal*, vol. 31, no. 1, pp. 62-93.

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