

Leaving the Shadow: A Configurational Approach to Explain Post-Identification Outcomes of Shadow IT Systems

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Appendix (available online via <http://link.springer.com>)

Appendix 1: Case vignettes

System	Short description
S ₁ BOARD	GPS-based board computer solution. Physical device and software interface to existing ERP solution. Implemented by local subsidiary of a waste management company
S ₂ CRM	CRM solution in-use in an IT service firm. Hosted on a local server and administered by an employee in a BU; used by the firm's sales employees
S ₃ CONTRACT	Local subsidiaries in an insurance firm that expanded across the EU implemented their own insurance platform for contract and inventory management
S ₄ CARGO	Excel-based application for "leg-based" calculation of freight costs. Implemented in U.S.-subsidiary of a large airline
S ₅ IT DB	Database to support decision making in a local IT unit. Bootlegging effort not authorized by head of IT
S ₆ MARKET DATA	Modified standard software for market data delivery in a savings bank; used by three units (trading, treasury, and back office); provided an edge over the market
S ₇ ALGO	Algorithmic trading tool in a bank in support of ForEx trading; proprietary solution developed by a department team in a savings bank
S ₈ FIXINGS	The system creates fixings (reference prices) based on market and internal data; used by two units (treasury and back office) in a savings bank
S ₉ HOT BILLING	Modified purchased software to perform billing in closed properties (e.g., hotels)
S ₁₀ BILL-SWEEP	Billing helper in a large Telco firm to deal with special billing cases that could not be handled in the central solution processing large amounts of transactional data
S ₁₁ IP-TEL	A remote unit in a large Telco firm improvised an IP telephony solution to cut wait times of several days for central support
S ₁₂ BOOKING	Initially evolved as a work around to the problem of one unit to perform room bookings (incl. calendar integration etc.). The in-house consultant unit developed a robust solution now in-use by many units
S ₁₃ ASSET MGT	A functional head of a large cooperation implemented its own parallel solution for asset accounting drawing on a vendor's standard software package; used on enterprise-scale (12.000 people)
S ₁₄ CUST. MGMT.	Standard software in a marketing unit, purchased and administered by department team despite of the existence of a central solution
S ₁₅ EQUIP	Access-based forecasting tool for measurement equipment. Capability was not part of the ERP standard; local unit engaged with consultants to develop a new solution; replaced by more advanced ERP
S ₁₆ ADMIN	Tool used by administrators of an IT service provider to monitor specific customer environments; entire tool suite, detected within WIN 7 roll-out.
S ₁₇ AERO	Specialized simulation tool for airflow and aerodynamics in a business department of a global technology company; after detection, tool was registered by central IT
S ₁₈ FIN-CALC	Access DBs used to make calculations regarding accounting financial instruments, especially hedge accounting, effectivity calculation, fair value calculation and hidden reserves

S ₁₉ RECON	Excel-based reconciliation of trades between front office and back office in a global bank
S ₂₀ DOC-2-DOC	Doctor-to-doctor communication based on google hangouts; piloted by a large hospital and discontinued after detection in IT assessment
S ₂₁ FILE	File service developed by power users in one business unit and hosted in secrecy in one of the firm's data centers. Provided to other users based on word-of-mouth
S ₂₂ SETTLE	Excel-based reconciliation tool to prepare settlement statements; developed and maintained by external consultants
S ₂₃ UNDERWRITE	Excel-based tool that was used by underwriters in a reinsurance to support them in calculating hazard rates; developed and maintained by external consultants
S ₂₄ SIM DISASTER	Tool to perform simulations on possibly occurring natural disasters, i.e. for risk assessment
S ₂₅ PDM	Product data (i.e., product lifecycle) management solution to maintain and configure products; store product specifications; add new products; two interfaces, one of which goes to the company's ERP system; tool was needed as there was none available (automation gap)
S ₂₆ MUNICIPAL WASTE	Local solution by one subsidiary to support municipal waste management process which diverged from the firm's standard business model and ERP support
S ₂₇ CTRL COCKPIT	Consolidating waste volume data and support handover from local units to controlling unit and to prepare monthly top management reports; the software was already in-house as a unit "in the next building" had nurtured it

Appendix 2: Aggregated table of cases

SYSTEM	DISCONTINUED?	REPLACEMENT SYSTEM?	IT TAKEOVER?	OUTCOME	SOCIAL DEFICIENCY	TECH. DEFICIENCY	SCOPE OF USE	BUSINESS-IT TRUST	STRICT IT POLICY	TASK RELEVANCE	CONFIGURATION
S ₁ BOARD	Y	N	-	Phase-out	•	•	⊗	⊗	⊗	⊗	1
S ₂ CRM	Y	Y	-	Replacement	⊗	•	•	⊗	•	•	n/a
S ₃ CONTRACT	N	-	N	Business-managed	⊗	⊗	•	⊗	⊗	•	5
S ₄ CARGO	N	-	N	Business-managed	⊗	•	⊗	⊗	⊗	•	n/a
S ₅ IT DB	Y	Y	-	Replacement	•	•	⊗	•	•	•	3
S ₆ MARKET	N	-	Y	IT-managed	⊗	⊗	•	⊗	•	•	4
S ₇ ALGO	Y	N	-	Phase-out	•	•	⊗	⊗	•	⊗	n/a
S ₈ FIXINGS	N	-	Y	IT-managed	⊗	⊗	•	⊗	•	•	4
S ₉ HOT BILLING	Y	N	-	Phase-out	•	•	⊗	⊗	⊗	⊗	1
S ₁₀ BILL-SWEEP	Y	N	-	Phase-out	•	•	⊗	⊗	⊗	⊗	1
S ₁₁ IP-TEL	Y	-	-	Replacement	•	•	⊗	⊗	⊗	•	2
S ₁₂ BOOKING	N	-	Y	IT-managed	⊗	⊗	•	⊗	•	•	4
S ₁₃ ASSET MGT	N	-	Y	IT-managed	⊗	•	•	⊗	⊗	•	n/a
S ₁₄ CUST. MGMT.	N	-	N	Business-managed	⊗	⊗	•	⊗	⊗	•	5
S ₁₅ EQUIP	N	-	N	Business-managed	⊗	⊗	⊗	⊗	⊗	•	6
S ₁₆ ADMIN	N	-	N	Business-managed	⊗	⊗	⊗	⊗	⊗	•	6
S ₁₇ AERO	N	-	N	Business-managed	⊗	⊗	⊗	⊗	⊗	•	6
S ₁₈ FIN-CALC	Y	Y	-	Replacement	•	•	⊗	•	•	•	3
S ₁₉ RECON	Y	Y	-	Replacement	•	•	⊗	•	•	•	3
S ₂₀ DOC-2-DOC	Y	Y	-	Replacement	•	•	⊗	⊗	⊗	•	2
S ₂₁ FILE	Y	Y	-	Replacement	•	•	•	⊗	•	•	n/a
S ₂₂ SETTLE	Y	Y	-	Replacement	•	•	⊗	⊗	⊗	•	2
S ₂₃ UNDER-WRITE	Y	Y	-	Replacement	•	•	⊗	⊗	⊗	•	2
S ₂₄ SIM DISASTER	N	-	N	Business-managed	⊗	⊗	⊗	⊗	⊗	•	6
S ₂₅ PDM	Y	Y	-	Replacement	•	•	⊗	•	•	•	3
S ₂₆ MUNICI-PAL WASTE	Y	Y	-	Replacement	•	•	⊗	⊗	⊗	•	2
S ₂₇ CTRL COCKPIT	N	-	N	Business-managed	⊗	⊗	⊗	⊗	⊗	•	6
Total	15	10	14		14	17	8	4	10	23	

Legend: Y... yes, N... no | • actualized ⊗ not actualized, n/a... not available