Business Sentiment Lexicon.

As the data for the BS Lexicon development, two sources were used: (1) corpus, i.e., contextual ticket texts and (2) CHM descriptions from the ITIL handbook. The following five steps were included in the concept development: (1) we performed standard sentiment analysis with VADER [1] on the application case text corpus. VADER approach (lexicon/ thesaurus-based) was selected due to its general-purpose robustness and popularity as a gold standard list of lexical features, along with their associated sentiment intensity (valence); (2) based on the valence distribution for each ticket text entry in the corpus, keywords with semantic load (negative and positive) were identified; (3) in parallel, we extracted main topics with descriptive keywords CHM descriptions from the ITIL handbook while performing unsupervised LDA analysis; (4) using the keywords from step 2 and 3, the final list was created. The process was supported by the method of expert guesses and a web conference interview with the SME; (5) afterward, considering the logic of VADER and business context, the researchers established a set of semantic and syntactic rules for BS analysis.

Business Sentiment Lexicon with assigned valences.

Tickets	ITIL	Valence
Expressions		
no risk, no outage		+2
be so kind, would be nice		0.5
disaster recovery, set alarms warnings, poison attack vulnerability, critical security leaks, fan, outstanding windows updates, thank you, kind regards, would like, best regards	request for change	0
big measure	projected service outage, change advisory board, high impact, major change	-0.5
Single key words		
kind, success, correct, like, nice	well, successful, happy	0.5
disaster, recovery, affected, stop, disable, dump, alarm, warning, poison, attack, vulnerability, error, prevent, drop, cancel, delete, exclude, problem, problems, faulty, failed, destroy, defective, obsolete, lack, security, leak, crash, please, support, optimize, grant, privilege, create, dear, acceptance, clarity, restore, increase, danger, balance, right, deny, wrong, retire, missing, weak, invalid, see, follow, yes, allow, approve, approval, confirm, read	problem , failed, information, operational, identify, order, include, adequately, procedure, necessary, assess, criteria, clear, provide, potentially, identification, adequate, initiate, value, KPI, standard, schedule, align, properly, release, accurate, report, organization, continuous, ensure, service, beneficial, stakeholder, requirement, correct, record, essential, clearly, RfC, support, tool, relevant, attempt ,subsequently, configuration, different, follow, directly, CI, potential, request, individual, plan, work, evaluate, author, organizational, manage, number, financial, status, low, chronological, recommend, responsible, model, accountable, handle, timescale, business, normal, submit, update, create, manual, consider, backout, accept, item, project, deliver, formal, data, iterative, produce, local, describe, test, improve, result, deployment, deploy, technical, management, repeatable, determine, minimum, develop, appropriate, activate, implement, require, process, evaluation, customer, contractual, authorize, share, acceptable	0
blocked, critical	cost, PSO, CAB, important, unauthorized, major, significant, undesirable, incomplete, delegate, avoid, coordinate, immediately, significantly	-0.5
offline, risk, outage, emergency, downtime	impact, risk, emergency, incident, outage, downtime	-1
rejected	unacceptable	-2

Comparative scoring, semantic, and syntactic rules of VADER and Business Sentiment Lexicon.

Valence rules	**VADER** [1]	**BS**
Scoring rules	[-4; +4]	[-2; +2]
Semantic rules		
Typical business ethics words (e.g., “please”, “dear”, “thank you”)	strongly positive	decreased to 0
Words denoting complex IT problem solving (e.g., “incident”, “emergency”, “downtime”)	strongly negative	slightly increased to -0.5/-1
Typical daily work of IT ticket domain words (e.g., “problem”, “failed”, “adequate”)	positive/ negative	categorized as neutral with 0 valence as they belong to daily work
Typical positive words (e.g., “well”, “successful”, “happy”)	strongly positive	slightly decreased to +0.5
Syntactic rules (intensifiers)		
Capitalizations in the positive and negative lexicon keywords	additional +0.733/-0.74	additional +/- 0.5
Capitalizations in the neutral lexicon keywords and the words outside the lexicon	-	-0.1
Dates, Time	-	-0.5
"!", "*", "=", "-", "#" in the positive and negative lexicon keywords	-	additional +/- 0.5

"!", "*", "=", "-", "#" in the neutral lexicon keywords and the words outside the lexicon	-	-0.1
Negation	regular negation words	"no", "not"

[1] C.J. Hutto, E. Gilbert, VADER: A Parsimonious Rule-based Model for Sentiment Analysis of Social Media Text, in: Eighth Int. Conf. Weblogs Soc. Media, Ann Arbor, 2014. http://sentic.net/ (accessed June 24, 2020).