

SpeechDat II Language Dependent Database Specifications for German

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1. Introductory Remarks

The Fixed Network database of the German language will comprise a total of 5000 speakers. 1000 of these speakers were recorded in SpeechDat(M), the other 4000 speakers are recorded in SpeechDat II. Note that the recording material in SpeechDat II is slightly different from the one of SpeechDat(M) (Deliverable SD 1.1.1 defines the SpeechDat II corpus).

2. Database Contents

Each call within the database will consist of a total of 51 items. 40 of these items are mandatory within SpeechDat II, and 11 items are additional, optional material.

Number	Item Type	Specification	Mnemonic
2	isolated digit items	isolated digit	I1
		sequence of 10 isolated digits	B1
4	digit/number strings	prompt sheet number ≥ 5 digits	C1
		telephone number (9-11 digits)	C2
		credit card number (15-16 digits)	C3
		PIN code (6 digits)	C4
1	natural number		N1
1	money amount	currency amount, mixed size and units	M1
2	yes/no questions (spontaneous)	predominantly yes	Q1
		predominantly no	Q2
3	dates	spontaneous date, e.g. birthdate	D1
		prompted text form	D2
		relative and general date form	D3

Table 1: SpeechDat II item list

Number	Item Type	Specification	Mnemonic
2	times	time of day, spontaneous	T1
		prompted, mixed analogue/digital	T2
3	application keywords/keyphrases		A1-3
1	word spotting phrase using embedded application words		E1
5	directory assistance names	spontaneous (e.g. fore-name)	O1
		city of birth/growing up (spontaneous)	O2
		set of 150 SDB full names	O3
		most frequent cities	O4
		most frequent , companies, agencies	O5
3	spellings	spontaneous spelling, e.g. forename	L1
		directory city name	L2
		real/artificial word	L3
4	isolated words		W1-4
9	phonetically rich sentences		S1-9
11	partner specific material	speaker gender question	Y1
		fuzzy question	Y2
		birthdate request	Y3
		speaker region question	Y4
		today's date	Y5
		form task	Y6-9
		spontaneous speech	X1
		good-bye phrase	X2
51	TOTAL		

Table 1: SpeechDat II item list

Most optional items are at the end of the prompt sheet so that not answering them still gives a complete SpeechDat II recording.

If the recording of the optional material leads to problems, e.g. due to the extended duration of the call, then it will be removed from new versions of the prompt sheets. The optional material will not be validated and transcribed with the same priority as the mandatory material, and it may be excluded from the SpeechDat II database.

3. Specifications of Procedures

3.1 Isolated Digit

Prompt	read from sheet
Representation	N
Vocabulary	N= <i>null, eins, zwei, zwo, drei, vier, fünf, sechs, sieben, acht, neun</i>
Selection	equal distribution by random selection on representation (thus no compensation for <i>zwo</i> and <i>zwei</i>)

3.2 Isolated digit sequence

Prompt	read from sheet
Representation	* N N N N N N N N N N N #
Vocabulary	isolated digits
Selection	random selection of 10-digit strings with all digits different
Remarks	The star and hash are included in the prompts to motivate people to pronounce the digits in isolation.

3.3 Prompt sheet number

Prompt	read from sheet
Representation	N N N N N N N - C
Vocabulary	isolated digits, C = X <i>Bindestrich, Strich</i>
Remarks	The prompt sheet number consists of 7 digits plus a check sum digit separated by a hyphen. This check sum digit is computed by the ISBN check sum procedure: $\text{checkdigit} = \left(\sum_{i=1}^6 d_i \times i \right) \bmod 11$

3.4 Telephone number

Prompt	read from sheet
Representation	<area code> / <number> with <area code> a 3-5 digit string beginning with 0 and <number> a 4-8 digit string without leading zeroes
Vocabulary	isolated digits
Selection	random selection

Remarks	<p>In German, telephone numbers are often grouped into digits of three and two and spoken as natural numbers. Thus <number> is grouped as follows: 4-4 for 8 digit numbers, 3-4 for 7 digit numbers, 2-2-2 for 6 digit numbers, and no grouping for shorter numbers.</p> <p>The mobile networks have their own formats: a four digit area code (0161, 0171, 0172), followed by an 8 digit number.</p> <p>The GSM number format will be used if a specification is available in time.</p>
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3.5 Credit card number

Prompt	read from sheet
Representation	4-4-4-4 (MasterCard/VISA) and 4-6-5 (American Express) layout
Vocabulary	isolated digits
Selection	the credit card numbers are randomly selected from a list of 150 numbers provided by Kamran Kordi (cf. Appendix 1:). The 4-6-5 AmEx layout will use the same set of 150 numbers with the last digit removed. No checksum will be used.

3.6 PIN code

Prompt	read from sheet
Representation	6 digit string
Vocabulary	isolated digits
Selection	random selection from the list of 150 PIN codes supplied by Kamran Kordi (cf. Appendix 2:).

3.7 Natural number

Prompt	read from sheet
Representation	digit string without punctuation marks
Vocabulary	digit, <i>ein, elf, zwölf, dreizehn, vierzehn, fünfzehn, sechzehn, siebzehn, achtzehn, neunzehn, zwanzig, ..., neunundneunzig, hundert, tausend</i>
Selection	random selection from 1 to 99.999
Remarks	punctuation marks will not be used in the representation to prevent them from being spoken. This may result in large numbers being misread. Numbers greater than 100 are transcribed as separate words to reduce the size of the dictionary.

3.8 Money amounts

Prompt	read from sheet
Representation	DM N.X where N is a natural number (no leading zeroes), and x is a digit string between 00 and 99 or a sequence of two hyphens "--".
Vocabulary	natural numbers, <i>DM, Deutsche Mark, D-Mark, Mark, Pfennig</i>
Selection	Random selection in the range of DM 10.00 to DM 9999.00

3.9 Times

Time of Day

Prompt	spontaneous
Representation	<i>Wie spät ist es jetzt?</i>

Prompted

Prompt	read from sheet
Representation	{<day> <precision> <rel time> <hour12> {<ampm>} {<day>} <precision> <hour24> Uhr <minute> {Minute{n }}}
Vocabulary	<precision>= <i>fast, genau, ungefähr, so gegen</i> <day>= <i>gestern, morgen</i> <rel time>= <i>viertel, halb, dreiviertel, kurz, vor, nach, ab, über</i> <hour12>= <i>eins..zwölf</i> <ampm>= <i>morgens, vormittags, nachmittags, abends, nachts, Mitternacht, Mittag</i> <hour24>= <i>null, ein,..., dreiundzwanzig</i> <minute>= <i>null, eins, eine, .., neunundfünfzig</i>

3.10 Dates

Birthdate

Prompt	spontaneous
Representation	<i>Bitte nennen Sie Ihr Geburtsdatum</i>

Relative and General Date Forms

Prompt	read from sheet
Representation	{<rel_exp>, } <day_num> . <month_num> . <year> with <rel_exp> given in orthographic form, and <day>, <month>, <year> in numerical format
Vocabulary	<rel exp> = <i>heute, gestern, morgen, vorgestern, übermorgen, letzte Woche, letzter Monat, letztes Jahr, nächste Woche, nächster Monat, nächstes Jahr</i> <day_num>=1..31, <month_num>=1..12, <year>=85..99 and 1985..2005
Remarks	Dates follow calendar constraints, e.g. no 29th February 1985

Prompted Text Form

Prompt	read from sheet
Representation	<day_name> , <day_num>.<month_name>{.<year>}
Selection	random selection
Vocabulary	<day_name>= <i>Montag, Dienstag, Mittwoch, Donnerstag, Freitag, Samstag, Sonnabend, Sonntag</i> <month_name>= <i>Januar, Februar, März, April, Mai, Juni, Juli, August, September, Oktober, November, Dezember</i>
Remarks	There exist variants for some month names: <i>Jänner</i> for <i>Januar</i> (dialect), <i>Juno</i> for <i>Juni</i> and <i>Julei</i> for <i>Juli</i> (disambiguation in speech). They will not be prompted for explicitly, but may well be spoken.

3.11 Spelled words

Spontaneous

Prompt	spontaneous
Representation	<i>Bitte buchstabieren Sie Ihren Vornamen.</i>

Real/Artificial words read from sheet

Prompt	read from sheet
Representation	<char> ⁿ with n = [6..14] for real words, n = 10 for artificial words
Vocabulary	<char> = A-Z, a-z, Ä, ä, Ö, ö, Ü, ü, ß, é, è, à, ‘, -, *, # <i>klein, groß, doppel</i>

The artificial words will be sequences of 10 letters with the individual letters selected randomly from the vocabulary of 66 characters. For 4000 speakers this will yield $4000 * 10 / 66 = 606$ samples of each character, plus the realizations of *klein* and *groß*. The final number of samples will be slightly lower because if the word *doppelt* is used, then the following character is pronounced only once.

The spelling vocabulary for the real words cannot yet be given in its entirety. The preliminary list is in Appendix 6:

3.12 Application keywords / keyphrases

In German there exist at least three styles for issuing commands in automated services: imperative, infinitive or nominal style. In imperative style, the second person singular imperative form, in infinitive style the infinitive form of a verb is used. In general, the imperative form is used for simple verbs, i.e. non-compound verbs or if the addressee is asked to perform some action, e.g. *wähle <number>*, *lösche <name>*, etc. The infinitive form is used for compound verbs (which split into their components in the imperative form), e.g. *wiedergeben*, *hinzufügen*, etc.

The nominal style uses a single noun to express the desired action or service. It is used for general services or if there are no adequate single verbs, e.g. *Vermittlung*, *Wahlwiederholung*. It is also natural to use short phrases to express a command, e.g. *wiederhole die Wahl*, or elliptical phrases, e.g. *nächste* for *nächste Nachricht*.

Note that in nominal style determiners, verbs, and adjectives are number-, case- and gender-sensitive: e.g. *nächste* (fem sing) vs. *nächster* (masc sing) vs. *nächstes* (neut sing) vs. *nächsten* (plur), etc. In elliptical phrases, the word determining the number, case, or gender is often missing, and hence has to be guessed from the context.

In SpeechDat II both nominal and infinitive style are used. Infinitive style is used to indicate actions, e.g. *wählen*, *wiederholen*, *löschen*, etc; nominal style is used to denote agents, interface items, telephone objects, or immediate actions for which there is an appropriate noun, e.g. *Vermittlung*, *Liste*, *Menü*, *Raute*, *Stop*.

German	English	Description
<i>Vermittlung</i>	operator	user requests transfer to operator
<i>wiederholen</i>	repeat	repeat the last directory information given

Table 2: Application words

German	English	Description
<i>wählen</i>	call/dial	place the call using the given number
<i>deutsch</i>	German	keyword for switching to German
<i>Wahlwiederholung</i>	redial	redial last Number or Name
<i>Abbruch</i>	cancel	cancel editing or dialling operation
<i>Hilfe</i>	help	request help information for current dialogue mode
<i>pogrammieren</i>	program	enter program mode to list or edit user-defined settings or preferences
<i>Verzeichnis</i>	directory	enter directory mode (or omit – simply having one menu level)
<i>Menü</i>	menu	return to main menu (or omit – simply having one menu level)
<i>Liste</i>	list	list directory entries
<i>Stop</i>	stop	stop directory listing
<i>nächste</i>	next	list or change next directory entry
<i>vorherige</i>	previous	list or change previous directory entry
<i>neu</i>	add	add name to directory
<i>löschen</i>	delete	delete name from directory
<i>ändern</i>	change	change name or number details in directory
<i>Ende</i>	terminate	quit the application
<i>weiter</i>	continue	continue playout
<i>erste</i>	rewind	rewind to start of list
<i>Ausgabe</i>	play	play current message
<i>Versand</i>	send	send current message
<i>Aufnahme</i>	record	record a greeting message
<i>Sprache</i>	language	select language of interaction

Table 2: Application words

The following application words are added to this list:

<i>Bestätigung</i>	confirmation	confirm an action or input
<i>an</i>	on	switch service/mode on
<i>aus</i>	off	switch service/mode off
<i>Eingabe</i>	enter	enter a command or item

Table 3: Additional application words

<i>Nachricht</i>	message	prompt for a message
<i>Beantworter</i>	answering machine	select answering machine mode
<i>Raute</i>	hash	special symbols on touch-pad handsets
<i>Stern</i>	star	
<i>Quadrat</i>	square	

Table 3: Additional application words

3.13 Application word phrases

For every application word there is at least one carrier sentence (more if the word of interest is case-, gender-, or number-sensitive). The phrases are:

Word	Phrases
<i>Vermittlung</i>	die Vermittlung bitte zur Vermittlung bitte bitte rasch die Vermittlung sofort Vermittlung zuschalten ich hätte gerne die Vermittlung bitte
<i>Wiederholung</i>	die Wiederholung bitte bitte keine Wiederholung mehr Wiederholung! die Nachricht wiederholen bitte wiederholen Sie
<i>Wahl</i>	die Wahl bitte geben Sie die Wahl ein jetzt die Wahl eingeben bitte wählen Sie wählen!
<i>deutsch</i>	alles in deutsch bitte Sprache deutsch ab sofort weiter in deutsch deutsch bitte ich spreche deutsch.
<i>Wahlwiederholung</i>	die Wahlwiederholung bitte Wahlwiederholung! Hilfe zur Wahlwiederholung Ende der Wahlwiederholung nochmal Wahlwiederholung

Table 4: Application word phrases

Word	Phrases
<i>Abbruch</i>	sofort Abbruch bitte Abbruch, schnell Abbruch! abbrechen! jetzt abbrechen
<i>Hilfe</i>	die Hilfe bitte sofort Hilfe Hilfe! Ende der Hilfe jetzt Hilfe Faxe löschen
<i>Programm</i>	das Programm bitte den Modus "Programm" einschalten Programm! ich möchte zum Programm jetzt programmieren
<i>Verzeichnis</i>	das Verzeichnis bitte zum nächsten Verzeichnis zeige mir das Verzeichnis schliesse das Verzeichnis sofort das steht im Verzeichnis drin
<i>Menü</i>	das Menü bitte aus dem Menü auswählen zeige mir das Menü Menü! gehe zum nächsten Menü
<i>Liste</i>	die Liste bitte alle Einträge der Liste zeigen Einträge auflisten aus der Liste löschen in die Fax-Liste aufnehmen
<i>Stop</i>	sofort Stop bitte Stop! stoppen! danach dann Stop! stoppe die Ausgabe
<i>nächste</i>	der nächste Eintrag zum nächsten Eintrag die nächsten Einträge zeigen nächster Eintrag Eintrag in die Liste

Table 4: Application word phrases

Word	Phrases
<i>vorherige</i>	der vorherige Eintrag zum vorherigen Eintrag vorheriger Eintrag den vorherigen Eintrag ändern lösche Eintrag
<i>neu</i>	die neue Nachricht zur neuen Nachricht keine neue Nachricht Nachrichten ausgeben Nachricht Stop!
<i>löschen</i>	den Eintrag löschen bitte lösche alle Einträge löschen! die Nachricht von gestern löschen alle Faxe löschen bitte
<i>ändern</i>	den Eintrag ändern bitte ändern! ändere den Empfänger der Nachricht das Fax ändern die Sprachnachricht ändern und verschicken
<i>Ende</i>	sofort Ende bitte Ende! beenden! danach bitte zum Ende beenden des Programms
<i>weiter</i>	zur Nachricht weiter weiter! die weiteren Faxe anzeigen keine weitere Eingabe mach weiter mit der Liste
<i>erste</i>	die erste Nachricht zur ersten Nachricht erster Eintrag zur ersten erster Eintrag
<i>Ausgabe</i>	die Ausgabe der Nachricht alle Nachrichten ausgeben Ausgabe! Ausgabe aller Nachrichten die Ausgabe umleiten

Table 4: Application word phrases

Word	Phrases
<i>Versand</i>	der Versand der Nachricht bitte das Fax versenden Status des Versands anzeigen Fax zum Versand weiterleiten Hilfe zum Versand ausdrucken
<i>Aufnahme</i>	die Aufnahme der Nachricht das Gespräch aufnehmen Aufnahme! aufnehmen! Aufnahme abspielen
<i>Sprache</i>	das Menü Sprache bitte Sprache wechseln wechsle zur Sprache deutsch zeige die Liste der Sprachen das Menü "Sprache" ausgeben
<i>Bestätigung</i>	die Bestätigung der Nachricht bestätige! Bestätigung! Bestätigung der Eingabe die Eingabe bestätigen
<i>an</i>	Aufnahme an, bitte an! schalte die Ausgabe an anschalten! Eingabe: an
<i>aus</i>	Aufnahme aus, bitte aus! schalte die Ausgabe aus ausschalten! Eingabe: aus
<i>Eingabe</i>	die Eingabebitte Eingabe! zurück zur Eingabe weiter zur nächsten Eingabe Eingabe der Faxnummer
<i>Nachricht</i>	die Nachricht bitte Nachricht ausgeben dritte nicht dringende Nachricht vorspielen letzte Nachricht anzeigen Nachrichten von Florian Murr von gestern vorspielen

Table 4: Application word phrases

Word	Phrases
<i>Beantworter</i>	den Beantworter bitte schalte den Beantworter ein der Beantworter ist eingeschaltet Beantworter neu programmieren Beantworter Stop!
<i>Raute</i>	die Raute bitte Raute eingeben als nächstes die Taste mit der Raute drücken Taste Raute drücken drücken Sie die Raute
<i>Stern</i>	den Stern bitte Stern eingeben als nächstes die Taste mit dem Stern drücken Taste Stern drücken drücken Sie den Stern
<i>Quadrat</i>	das Quadrat bitte Quadrat eingeben als nächstes die Taste mit dem Quadrat drücken Taste Quadrat drücken drücken Sie das Quadrat

Table 4: Application word phrases

3.14 Yes/no and spontaneous questions

Prompt	Spontaneous
Representation	The two questions that will be used are <i>Waren Sie schon einmal im Kino?</i> (Have you ever been to a cinema?) and <i>Benutzen Sie ein schnurloses Telefon?</i> (Are you using a cordless phone?)
Vocabulary	<i>ja, nein</i>
Remarks	The first question is expected to yield positive responses, the second negative ones (in SpeechDat(M), the ratios were 97% positive vs. 2% negative and 86% negative vs. 12 % positive respectively).

3.15 Phonetically rich sentences

The phonetically rich sentences are derived from a corpus containing the economics section of the *Süddeutsche Zeitung* newspaper of May 1994. The original corpus has been modified to improve legibility – long sentences have been split, many numerical phrases have been deleted, sentences were added to include potentially phonetically rich or application-dependent words, and words were added to make sentences grammatical or legible.

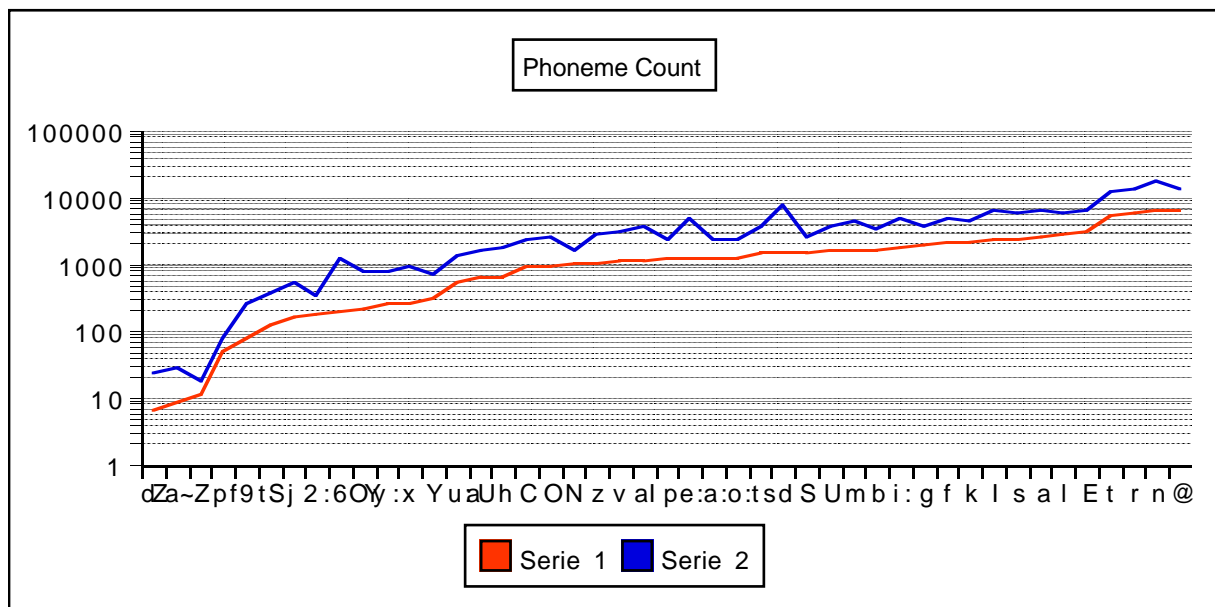
For this corpus, there exists a pronunciation dictionary in German SAM-PA which covers most of the corpus (the exact coverage was not known at the beginning of the recordings because the corpus itself was still being established).

The phonetically rich sentences are selected via the following procedure:

- discard sentences not covered by the lexicon
- discard sentences that are not well readable
- convert corpus to a phonemic (canonic) form by a grapheme-to-phoneme converter (this procedure may result in erroneous transcriptions because of ambiguities in the conversion)
- compute a frequency list of phonemes for the corpus; discard the n least frequent phonemes (n=3 for German; dʒ, a~, and z are discarded because they are not native German phonemes).
- select disjoint sets of sentences (max. 9 sentences per set) that contain all phonemes at least twice with a greedy algorithm

There will be approximately 6.000 different sentences (see section 5.2). It is assumed that these 6.000 sentences will yield an acceptable diphone distribution.

For a 10% text subset of the corpus (>2900 sentences with >8000 word types, i.e. approx. 25% of the corpus vocabulary) the monophone distribution is as follows (it is assumed that these figures scale up to the entire corpus):



The top curve displays the phonemes in the corpus, the second curve displays the phonemes in the lexicon. The phonemes /dʒ/, /a~/, and /z/ are used only in foreign language words; they will not be considered in the generation of the phonetically rich sentences (although they will be present).

3.16 Phonetically rich words

The phonetically rich words are taken from the SpeechDat lexicon. The maximal number of repetition of words is 5.

The phonetically rich words are selected via the following procedure:

- compute a frequency list of phonemes for the corpus dictionary
- starting from the least frequent phoneme, select words from the dictionary that contain this phoneme until the minimum number of words is reached (5120 words for 1280

sheets for German).

The words selected from the dictionary must be well readable.

3.17 Directory assistance names

Geographic names

The list of 500 geographic names contains the German names of

- the EU countries
- the German federal states
- the individual volumes of the German telephone directories
- other countries
- touristically interesting regions of Germany
- German and other cities

The complete list is in Appendix 3:

Company and agency names

The list of companies and agencies contains

- long company names
- company acronyms and short forms
- names of political (i.e. government, jurisdiction, administration) institutions

The complete list is given in Appendix 4:

Proper names

The list of proper names is constructed from street names which themselves are made up of names, e.g. “Albert-Einstein-Straße“. Although streets are often named after well known persons this is not always the case. For the German SpeechDat corpus, 150 names of less known persons have been selected manually.

The complete list is given in Appendix 5:

3.18 Other material

The other material recorded consists of a question for the speaker’s gender, a question on the region the speaker entered school, some questions concerning a form on the prompt sheet, spontaneous speech, and a good-bye phrase.

The question for the speaker’s gender, birthdate, and region provides information on the speaker which cannot easily be obtained otherwise.

The request for today’s date gives auxiliary information on the date of call. The fuzzy question aims at eliciting “don’t know“-phrases which may be used as training material to distinguish clear yes/no answers from uncertain responses.

The prompt sheet contains a simple form in its original layout, e.g. a restaurant check, the telephone bill, a receipt, a train ticket, etc. The speaker is asked to identify the issuer of the form, the date on which the form was issued, the money amount, the position of the money amount,

etc. This material is recorded to gain some insight into speaker behaviour in real applications, e.g. tele-banking where the speaker has to specify a transaction, such as to transfer money to an account, indicate a date of travel, etc.

The spontaneous speech request aims at collecting natural speech on common topics, e.g. one's work, travelling to work, shopping, etc.

The final recording is not prompted for. The speech server just says thank you and good bye and starts the recording to capture any good-bye phrase or comment by the speaker.

3.19 Summary of deviations

The deviations from the SpeechDat II definitions concern only the optional and partner-specific material.

4. Links to SDB

The main links to SDB relate to the 10 digit string and the set of 150 proper names. No list of proper names has been available from the SDB partners for German when this document was written. Hence, the list contained here is offered to the SDB partners.

5. Prompt Sheets / Instruction Sheets

5.1 Creation

The prompt sheets are generated by the following procedure:

- a relational database contains all item texts grouped by category (i.e. numbers, digit strings, sets of sentences, sets of words, etc.)
- for those items whose count is smaller than the number of prompt sheets generated (i.e. 150 names, 150 credit card numbers, date & time expressions, etc.), items are selected randomly.
- the number of sets of words is double the number of sets of sentences, and it matches the number of prompt sheets. Hence, each prompt sheet uses a unique set of words, and each two prompt sheets use a unique set of sentences.

The procedures are written in Prolog and the RDBMS command language.

5.2 Number of prompt sheets

The German SpeechDat recording will use a combination of the feedback and the oversampling strategy for the distribution and generation of prompt sheets. The basic limiting factor for the number of prompt sheets is the maximum number of repetitions of an item:

Item	Repetitions	Items per Sheet
phonetically rich sentence	10	9
phonetically rich word	5	4

Table 5:

For 4000 speakers the minimum number is thus

- $4.000 / 10 = 400$ for the phonetically rich sentences,
- $4.000 / 5 = 800$ for the phonetically rich words

A feedback strategy requires considerable administrative overhead and depends crucially on very short time-spans between sending out prompt sheets, speakers calling, and a first validation of the calls. To relax these constraints, an oversampling of 60% is used; this results in approx. 1280 prompt sheets being generated, and each prompt sheet can be used for 5 calls.

5.3 Example

The prompt sheet consists of a folded A3 sheet (alternatively a double sided A4 sheet). The first page contains the instructions, a speaker information form, and a contact address. The inner pages, page 2 and 3, contain a final instruction test with the telephone number to call, and the prompt sheet itself.

The prompt sheet itself is divided into sections, the first one an introduction, the rest contain prompts. The items to be recorded are spread over the sheet so that there are no groupings of items larger than 3 (e.g. 3 sentences). Each section is marked by *Abschnitt X* with X a number. The text of the speech server is printed in plain style, the prompt text is printed in bold style, and the speech server beep is printed as a bullet •. Feedback text, e.g. *Sie haben die Hälfte des Fragebogens schon hinter sich gebracht* and intermediate instructions *Bitte blättern Sie jetzt um.* are printed where needed.

A sample prompt sheet is in the appendix.

Appendices

Appendix 1: List of credit card numbers

0500 8824 0710 2777	1461 2722 0290 7171	3513 3373 0400 6984	4294 2292 9923 2043
0490 2332 8674 1248	1541 8314 6395 9249	3483 1331 0764 7082	4284 1691 7296 9059
0510 0620 7667 3063	1456 9912 9725 2063	3523 3334 8802 8983	4194 9298 6775 0026
0480 8636 0800 9882	1556 8287 3613 9650	3473 9607 8626 0064	5505 8098 0844 1052
0520 2592 0833 4444	1441 2682 2366 3160	3533 0610 8714 6744	5495 8834 2184 6460
0470 1191 0364 9173	1561 2672 3583 9796	3463 2612 6195 0283	5515 1391 6594 8152
0530 9627 0888 9258	1431 1371 7635 1754	3543 6385 7875 5345	5485 2302 2692 8220
0460 6894 1601 2055	1571 9779 4095 9865	3458 0264 0590 7268	5525 9835 7188 4156
0540 2622 7895 8262	2502 0890 0300 6881	3558 8324 9325 7998	5475 6874 7286 9048
0455 3633 2402 8994	2492 2632 6096 2266	3443 1135 8304 2171	5535 1381 7615 9078
0555 0744 1721 0154	2512 7386 4186 5995	3563 7673 0320 9560	5465 8224 8297 9188
0440 1681 6295 4013	2482 1671 9896 1997	3433 9963 0234 1029	5545 0273 1421 8169
0560 0773 8387 0250	2522 6624 2093 1166	3573 3383 0220 7985	5683 8795 6614 0075
0430 9686 2602 6254	2472 0600 0864 3990	4504 0390 1291 7853	5693 3293 2392 7677
0570 3367 1735 1512	2532 3623 3185 3140	4494 9796 0420 0055	5783 2275 7776 0144
1501 0330 6973 4096	2462 1183 1811 9853	4514 1311 2322 9472	5793 1701 8278 9454
1491 1765 7405 2082	2542 8397 6634 5138	4484 7196 1211 9026	5889 1281 0370 3264
1511 2712 1274 1075	2457 3423 0670 0089	4524 0380 0110 9833	5893 9803 8865 3174
1481 6604 8812 7025	2557 1781 1365 7073	4474 2312 1301 6991	6506 9675 8376 9555
1521 3892 1201 5817	2442 8369 8616 5198	4534 2372 0664 4630	6496 8724 0754 7884
1471 0873 9933 1177	2562 1665 7368 2262	4464 8876 0680 9870	6516 7335 1235 2121
1531 1611 2666 7589	2432 0644 8695 8697	4544 0280 7396 7065	6486 6404 0034 1080
	2572 0165 1591 0008	4459 7097 0823 0176	6526 1631 1265 8057
	3503 3393 9315 6763	4394 0410 9705 2153	6476 8606 3276 2992
	3493 1581 8668 9356	4384 1791 8685 1713	6536 8845 7277 8261

Appendix 1: List of credit card numbers

9.7.97

6466 0700 0310 8146	8518 9786 0182 6089	9587 2282 8406 1065
6559 7694 0790 8062	8488 6285 1411 3077	9417 6784 1221 8076
6564 0720 9225 9062	8528 7703 7684 3680	9597 8975 9976 9998
6434 1035 7303 3557	8478 2412 9825 4083	
6574 9398 1755 7160	8538 2422 9669 3890	
6424 8785 1645 1048	8468 6187 9288 3081	
6584 7723 7974 9158	8566 0210 7625 9584	
6414 8202 3193 8083	8436 2192 8778 3081	
7507 9944 9407 5358	8576 3593 9099 9164	
7497 3792 1801 9340	8426 1774 0124 3469	
7517 3782 0780 8040	8586 1621 0580 0836	
7487 7313 2382 2079	8416 1114 0854 9315	
7527 9305 1745 7807	8596 9377 3413 7579	
7477 1125 7605 2163	9509 2891 9715 5985	
7537 0100 1321 8660	9499 3283 9213 9360	
7467 6794 0134 9982	9519 9115 0810 0016	
7565 2582 9696 2141	9489 9101 9813 4943	
7435 7375 1401 9147	9529 0630 0091 0043	
7575 8197 9198 9174	9479 1092 6374 8172	
7425 0654 0190 0241	9539 3094 8212 9133	
7585 9388 0900 9086	9469 0200 2702 1263	
7415 7323 9617 9030	9567 9279 9901 9649	
7595 7713 8704 9267	9437 3603 0690 6068	
8508 3403 8855 2002	9577 1711 2223 7376	
8498 9203 8189 9849	9427 9954 0734 7654	

Appendix 2: List of PIN codes

000100	066067	143144	257217
002003	068069	147148	265266
004005	070710	149152	272730
006007	072073	153154	283281
011012	076077	155156	284285
013014	078079	159160	293290
015016	081082	161621	296297
019021	085086	163164	298299
022023	087088	167168	333411
024025	089090	169172	336302
026027	091092	173174	337322
030310	095096	175176	338339
032033	097098	181820	347348
034035	099111	183184	354352
036037	112102	185186	355356
041042	115116	193194	364365
043044	117118	195196	366367
045046	119120	199201	374370
049050	122123	222300	378379
051052	127128	224211	384381
053054	129132	226227	389390
057058	133134	229214	395393
059061	137138	236237	398399
062063	139140	248249	444540
	141420	255256	447415

449404	587583	899900
456422	588589	
457441	596592	
466443	666700	
467460	668605	
469463	669612	
475472	676613	
485480	677614	
486481	678615	
488489	679662	
495492	687673	
496497	688633	
498499	689681	
555601	697682	
557500	698690	
559523	699722	
565611	777811	
566502	779733	
567524	787702	
568562	788723	
569563	789745	
576536	798785	
577578	799801	
579580	888922	
586581	898804	

Appendix 3: List of geographic

names

Aachen	Bad Kissingen	Biel	Budapest
Aalen	Bad Kreuznach	Bielefeld	Bulgarien
Ägypten	Bad Mergentheim	Bietighheim-Bissingen	Buttenwiesen-Pfaffenhofen
Algerien	Bad Oldesloe	Bitterfeld-Wolfen	Calw
Algier	Bad Segeberg	Böblingen	Cambridge
Allgäu	Bad Tölz	Bocholt	Caracas
Altenkirchen	Baden-Baden	Bochum	Carolina
Amberg	Baden-Württemberg	Bodensee	Celle
Amerika	Bamberg	Böhltz-Ehrenberg	Chemnitz
Amsterdam	Bangkok	Bonn	Chicago
Ansbach	Barcelona	Bosnien	Chile
Argentinien	Basel	Bosnien-Herzegowina	China
Arizona	Bautzen	Botrop	Cincinnati
Arrnheim	Bayern	Boulogne-Billancourt	Clermont-Ferrand
Aschaffenburg	Bayreuth	Brasilia	Cleveland
Atlanta	Belgien	Brasilien	Clichy
Aue	Belgrad	Bratislava	Coburg
Augsburg	Benelux-Stataten	Braunschweig	Cottbus
Australien	Berghelm	Bremen	Courbevoie
Backnang	Bergisch Gladbach	Bremerhaven	Cupertino
Bad Erms	Berlin	Brügge	Cuxhaven
Bad Hersfeld	Berlin-Brandenburg	Brünn	Dachau
Bad Homburg v. d. Höhe	Bermudas	Brüssel	Dallas
	Bern	Buchholz	Dänemark
	Biberach	Buchloe	Darmstadt

Deggendorf	Erbach Odenwald	Garmisch-Partenkirchen	Hamm
Den Haag	Erfurt	Gelsenkirchen	Hannover
Dessau	Erlangen	Genf	Havanna
Detmold	Eschborn	Genk	Heide
Detroit	Eschwege	Gera	Heidelberg
Deutschland	Essen	Gießen	Heidenheim
Diepholz	Esslingen	Gladbeck	Heilbronn
Dillingen	Euskirchen	Göppingen	Heinsberg
Dingolfing	Eutin	Görlitz	Helgoland
Donauwörth	Fellbach	Göteborg	Helmstedt
Dortmund	Finnland	Gotha	Helsinki
Dresden	Flensburg	Göttingen	Heppenheim Bergstraße
Dubai	Florenz	Griechenland	Herford
Dublin	Frankfurt (Oder)	Groß-Gerau	Herzogenaurach
Duisburg	Frankfurt am Main	Großbritannien	Hessen
Düren	Frankreich	Guatemala	Hildesheim
Düsseldorf	Freiburg im Breisgau	Gummersbach	Hiroshima
Edinburgh	Freising	GUS-Staaten	Höchst
Eifel	Freudenberg	Gütersloh	Hof
Eindhoven	Freudenstadt	Haag	Hofheim am Taunus
Eisenhüttenstadt	Friedberg Hessen	Hagen	Holland
Elsaß	Friedrichshafen	Hainburg	Hollywood
Emden	Fulda	Halle	Holzminden
Emmerich	Fürth	Hamburg	Homburg Efze
England	Füssen	Hameln	Homburg Saar

Hongkong	Kamp-Lindfort	Leer	Manhattan
Houston	Kanada	Leipzig	Mannheim
Höxter	Karibik	Leuna	Marburg
Hoyerswerda	Karlsruhe	Leverkusen	Marokko
Ilmünster	Kassel	Liechtenstein	Marseille
Indien	Kempten	Limburg	Mecklenburg-Vorpommern
Indonesien	Kenia	Lingen	Melbourne
Ingolstadt	Kiel	Lissabon	Memphis
Iran	Kirgisien	London	Menlo
Irland	Kleve	Los Angeles	Merzig
Iserlohn	Kobe	Lothringen	Meschede
Island	Koblenz	Lübbecke	Mexico City
Israel	Köln	Lübeck	Mexiko
Istanbul	Königsberg	Lüdenscheid	Miami
Italien	Konstanz	Ludwigsburg	Mittelfranken
Itzehoe	Kopenhagen	Ludwigshafen	Mönchengladbach
Japan	Korea	Lugano	Montabaur
Jena	Krakau	Lüneburg	Montana
Jersey	Krefeld	Luxemburg	Montenegro
Jerusalem	Kroatien	Maastricht	Moskau
Jordanien	Kulmbach	Madrid	Mülheim an der Ruhr
Jugoslawien	Lahn	Magdeburg	München
Kaiserslautern	Landersheim	Mailand	Münster
Kalifornien	Landsberg am Lech	Mainz	Nagasaki
Kambodscha	Landshut	Malakka	Nanking

Neckarsulm	Nürnberg/Fürth	Pfronten	Rosenheim
Neu-Ulm	Oberbayern	Philadelphia	Rostock
Neubrandenburg	Oberhausen	Philippinen	Rotenburg
Neuburg	Oberhausen Rheinland	Pinneberg	Rotterdam
Neunkirchen Saar	Offenbach am Main	Pittsburgh	Rottweil
Neuruppin	Offenburg	Plauen	Ruhrgebiet
Neuseeland	Oklahoma City	Polen	Rumänien
Neuss	Oldenburg	Portugal	Rüsselsheim
Neustadt	Olpe	Potsdam	Rußland
Neustadt an der Weinstraße	Oranienburg	Prag	Saarbrücken
New Delhi	Osaka	Pretoria	Saarland
New York	Oslo	Ramstein	Sarlouis
Niederbayern	Osnabrück	Rastatt	Sachsen
Niederrhein	Österreich	Ratzeburg	Sachsen-Anhalt
Niedersachsen	Paderborn	Ravenna	Saint-Étienne
Nienburg	Pakistan	Ravensburg	Saint-Germain
Nikosia	Palo Alto	Recklinghausen	Salt Lake City
Nizza	Papua-Neuguinea	Regensburg	Salzburg
Norddeutschland	Paris	Reutlingen	Salzwedel
Nordhausen	Passau	Rheine	San Antonio
Nordjapan	Peking	Rheinhausen	San Francisco
Nordrhein-Westfalen	Pennsylvania	Rheinland-Pfalz	Santa Clara
Normandie	Perth	Rhön	Sarajewo
Norwegen	Peru	Rio de Janeiro	Saudi-Arabien
Nürnberg	Pforzheim	Rom	Sauerland

Schlesien	Spanien	Toronto	Waiblingen
Schleswig-Holstein	Stadthagen	Traunstein	Waldshut
Schottland	Starnberg	Travemünde	Warrenmünde
Schwäbisch-Gmünd	Steiermark	Trier	Warschau
Schwäbisch-Hall	Steinfurt	Triest	Washington
Schwandorf	Stendal	Tschechien	Weiden in der Oberpfalz
Schwarzwald	Stockholm	Tübingen	Weimar
Schweinfurt	Straubing	Turin	Weißenburg in Bayern
Schwelm	Stuttgart	Türkei	Weißrußland
Schwerin	Südafrika	UdSSR	Wesel
Seoul	Südkorea	Uelzen	Wien
Serbien	Sydney	Ukraine	Wiesbaden
Shanghai	Syrien	Ulm	Wilhelmshaven
Siegburg	Taipei	Ungarn	Winterthur
Siegen	Taiwan	Unna	Wismar
Siena	Taunus	Uruguay	Witten
Singapur	Teheran	USA	Wittenberg
Skandinavien	Teltow	Utrecht	Wolfenbüttel
Slowakei	Tessin	Venezuela	Wolfsburg
Slowenien	Texas	Verden	Wunstorf
Soest	Thailand	Vevey	Wuppertal
Sofia	Thessalien	Vietnam	Würzburg
Solingen	Tianjin	Villingen-Schwenningen	Yokohama
Somalia	Tirol	Virginia	Zagreb
Sowjetunion	Tokio	Völklingen	Zürich

Zwickau

Zypern

Appendix 4: List of company names

AUA	Buderus	Citibank
Audi	BUND	Citroen
AvD	Bundesbahn	Clausthaler
Badenwerk	Bundesbank	Coca-Cola
Bahn-AG	Bundesfinanzhof	Colonia-Gruppe
BASF	Bundesfinanzministerium	Commerzbank
Bau-AG	Bundesgesundheitsministerium	Commodore
Bau-Steine-Erden	Bundeskanzler	Compaq Computer
Bayerische Landesbank	Bundeskartellamt	Computerwoche
Bayerische Vereinsbank	Bundespostministerium	Continental
Bayernwerk	Bundesrat	Creditanstalt-Bankverein
BayWa	Bundesregierung	Daewoo
Beamten-Versicherung	Bundessozialgericht	DAF
Beiersdorf	Bundestag	Daimler-Benz
Benetton	Bundesumweltministerium	Danone Gruppe
Bertelsmann	Bundesverfassungsgericht	Danzas
BfG-Bank	Bundeswehr	DAX
BHF-Bank	Bundeswirtschaftsministerium	Debis
BMW	Burger-King	Deckel
Boehringer	Bürgermeister	Degussa
Boeing	Canon	Dekra
Bosch-Siemens	Caterpillar	Delta Air Lines
BP	CDU	Delta-Pharma
Braun	Chrysler	DePfa-Bank
British Airways	Ciba-Geigy	Deutsche Bahn

Deutsche Bank	Escom	Fuji Photo Film	Hilton
Deutsche Genossenschaftsbank	Esso	Gardena	Hitachi
Deutsche Telekom	Eurocopter	GATT	Hoechst
Deutschlandfunk	Europabank	General Electric Company	Hoesch-Krupp
Diebold-Unternehmensberatung	Europcar	General Motors	Holsten-Bräuerei
Digital Equipment	Eurotunnel	Gerling	Holtzbrinck-Verlag
Digital-Kienzle	Expo	Geschäftsbank	Honda
Disney	Exxon	Gewerkschaftsbund	Honeywell
Dornier-Konzern	FAG-Kugelfischer	Gildemeister	Horten
Dow Chemical	Falke	Gothaer	HUK-Coburg
Dresdner Bank	FDP	Greenpeace	Humboldt-Universität
Dyckerhoff	Federal Express	Hacker-Pschorr	Hypo-Bank
Dywidag	Fiat	Hamburg-Mannheimer	Hyundai
Eastman Kodak	Financial-Times	Handelsblatt	Ibex
Eberspächer	Finanzamt	Hanse-Merkur	Ibis-Hotel
EC	Finanzministerium	Hanse-Lloyd	IBM
Edding	Fischer-Reisen	Heidelzement	IC
Edeka	Fleurop	Heilit&Woerner	ICE
EKO-Stahl	Fokker	Henkel	IHK
Électricité de France	Ford	Henninger-Bräu	Ikea
Electrolux	France Télécom	Henschel	Imhoff
Emnid	Frankona	Hermes-Versicherung	Innenministerium
Ergee	Franz Haniel	Hertie	Intel
Ericsson	Fraunhofer-Institut	Hetzel-Reisen	Intercity-Hotel
Escada	Friedrich Krupp	Hewlett-Packard	Interfax

International Business Machines	Kfz	Landesbank	Maggi
Iritecna	KG	Landesbausparkasse	Mahag
Isuzu Motors	Kia	Landeskartellbehörde	MAN
ITT	Kienzle	Landeskreditbank	Mannesmann
Iveco	Kirch-Gruppe	Landesregierung	Marks and Spencer
J.P. Morgan and Company	KLM	Landeszentralbank	Markt&Technik
Jacobs	Klößner-Humboldt-Deutz	Landgericht	Marriot International
Japan Airlines	Knorr	Landtag	Maserati
Jenoptik	Kolbenschmidt	Landwirtschaftsministerium	Matsushita
Johnson and Johnson	Kommunalverwaltung	Langnese	Mauser
Joop	Kraftfahrt-Bundesamt	Laurel	Maxhütte
Junghenrich	Kraftwerk	Lebensversicherung	Mazda
Juno	Krauss-Maffei	Leitheit	McDonald's
Justizministerium	Kreditgenossenschaft	Leonberger	McDonnell Douglas
JVC	Kreditinstitut	Leybold	MCI Communications
Karstadt	Kreissparkasse	Linde	McKinsey
Kartellamt	Kriminalpolizei	Linotype-Hell	Merck
Kässbohrer	Kronen-Brauerei	Lkw	Merkur
Kastner	Krupp-Hoesch	Lloyd	Merrill Lynch
Kaufhof	KWU	Löwenbräu	Metallgesellschaft
Kaufring	L'Oréal	LTU	Michelin
Kawasaki	Labour	Ludwig-Maximilians-Universität	Migros
Kellogg's	Lada	Lufthansa	Ministerpräsident
Kempinski-Hotels	Lancia	Maculan-Holding	Mitropa
Kenzo	Länderbank	Madsack	Moksel

Monsanto	ÖTV	Raiffeisen	Saarstahl
Motorola	ÖVP	Reichsbahn	Saba
MTU	Panasonic	Renault	Sachsenmilch
Münchener Rück	Parlament	Reuters	Sachserring
NCR	Patrizier-Bräu	Rewe	Safeway
NEC	PDS	Rhein-Zeitung	Saint-Gobain
Neptun-Werft	Pegulan	Rhône-Poulenc	Salamander
Nestlé	Peine-Salzgitter	Ricoh	Salomon
Nissan	Pepsico	RJR Nabisco Holdings	Sandoz
Nordstern	Peugeot	Robert-Bosch	Sanyo Electric
Northwest Airlines	Pfaff	Rockwell International	SAS
NTT	Pfizer	Rodenstock	SAT-1
NYNEX	Philip Morris	Rolls-Royce	SB-Kauf
Oberbürgermeister	Philips	Roussel-Uclaf	SBG
Oberfinanzdirektion	Phillips Petroleum	Rover	Schickedanz-Konzern
Oberverwaltungsgericht	Pirelli	Royal Dutch/Shell Gruppe	Schimmelpfennig
Oerlikon-Bühler	Polaroid	Royal PTT Nederland	Schmalbach-Lubeca
Oetker	Polizei	RTL	Schneider
Öko-Institut	Porsche	Rückversicherungs-AG	Schott
Olivetti	PreussenElektra	Ruhrgas	Schweizerische Bankgesellschaft
Olympia	Procter and Gamble	Ruhrkohle	Schweizerischer Bankverein
OPEC	Prudential	Rundfunk	Sears Roebuck
Opel	PTT Suisses	RWE Gruppe	Seat
Österreichische Post	Puch	Saab	SEL
Otto Versand	Quelle Gruppe	SaarlB	Semperit

Senat	Suchard	Toys "R" Us	Vobis-Computer
Sharp	Süd-Chemie	Treuhandanstalt	Volksbank
Shell	Südmilch	Triumph-Adler	Volksfürsorge
Siemens	SüdwestLB	Turbinen-Union	Volkswagen
Sixt	Sulzer-Escher	TÜV	Volvo
Skandia-Versicherung	Suzuki Motor	Uelaf	Vox
Sket	Swissair	Umweltnisterium	Vulkan-Konzern
SKF	SZ	Unilever	Wacker-Chemie
Skoda-VW	Tagesspiegel	Union Pacific	Walt Disney
SNCF	Tageszeitung	Unionsfraktion	Walter-Bau-AG
Sony	TAP	United Parcel Service	Wamsler
Spar Handelsgesellschaft	Tchibo	Universität	Wayss
Sparkasse	Technics	UNO	WDR
SPD	Tengelmann	Unterhaus	Wella
SPÖ	Tesa	Usinor-Sacilor	Westdeutsche Landesbank
Springer-Verlag	Texaco	Varta	Westinghouse Electric
Sprint	Texas Instruments	VDAK	WestLB
Stadt-Anzeiger	Thomson	VDO	Whirlpool
Stadtparkasse	Thorn	Veba	Winterthur-Versicherungen
Stadtwerke	Thuringia-Versicherungs-AG	Vedes	Woolworth
Steigenberger	Thyssen	Vereinsbank	Wybert
Steyr-Daimler	Time	Vereinte-Versicherungen	Xerox
Stollwerk	Times	Versicherungs-AG	Ymos
Strickwaren-AG	Toshiba	Versorgungsanstalt	ZDF
Stromgesellschaft	Toyota	Viag-Bayernwerk	Zeiss

Züblin

Zürich Versicherungen

Appendix 5: List of proper names

Abraham Hering	Clara Tott	Gerhard Muntink	Jakob Bensheimer
Adam-J. Krusenstem	Daniel von Büren	Gertrud Greising	Jannis Kapolos
Adam Ries	Derick Baegert	Gottfried Trippel	Jean Dolidier
Adolf Gröber	Dimitri Triadafllu	Gottlieb A. Richter	Johann Chr. Wilken
Aeneas Hertzig	Dorothea Schlözer	Gretel Baumbach	Johann-Hinrich Wichern
Agathe Lasch	Dragutin Filipasic	Gustav Sybrecht	Johanna Chlebarova
Agni Chondromatidou	Edwin Hörnle	Hanne Nüte	Johanna Stegen
Ahmed Zygouri	Emil Kömmerling	Hans-Günther Sohl	John Locke
Alexander Petöfi	Emine Tüylü	Hans Pössenbacher	Josef Boscbach
Alfred Fehler	Emma Vogel	Hans W. Mertens	Josephine Grau
Aloys Weddeling	Eugen Loher	Hedwig Pohlschröder	Julius Heywinkel
Andreas Counis	Eva-Maria Buch	Hein Saß	Jupp Müller
Anna-Klara Fischer	Ferdinand Hey'l	Heinrich Deumeland	Käthe Niederkirchner
Anna von Gierke	Franjo Dubravcic	Henriette Fürth	Karl Beckhusen
Arthur Piechler	Frieda Schanz	Hermann Allmers	Karl Friedrich Friesen
Barbara Gerretz	Friedel Gewecke	Hermann-Josef Hecker	Karoline Zorwald
Bengt Johansson	Friedrich B. Osiander	Hildegard Burjan	Katharina Busch
Bernhard Köthenbürger	Friedrich Kayßler	Hinrich Weyhausen	Katja Niederkirchner
Berta Lungstras	Friedrich Zundel	Hüsametin Özdemir	Klemens Horn
Carl Billand	Fritz Maenicke	Hugo Knippen	Konrad Huber
Christian-Friedrich Schwan	Gebhard Müller	Ida Noddack	Konstantin Wille
Christian Knayer	Georg C. Marshall	Ina Seidel	Laurentius Zeller
Christine Koch	Georg Eydell	Irma Sperling	Leon Bukofzer
Christoph Musmacher	Georg-Marcus Stein	Isabella Braun	Lillian Board
	Georg Queri	Isolde Kurz	Lotte Pulewka

Lucas Moser	Peter Müller	Wodzimierz Zyglowicz
Ludwig Leichhardt	Philipp Schneider	
Ludwig-Philipp Lude	Regina Pacis	
Manfred Stern	Richard Bodendorf	
Margarete Metz	Rifo Duclic	
Maria Juchacz	Rosalie Sauerma	
Marianne Weber	Rupprecht Heller	
Mario Carlucci	Sebastian Fischer	
Markus Pflüger	Shina-Sehat Kashani TelVerz	
Martin Heydert	Siegmund Schacky	
Mathias Müller	Simon-Hermann Post	
Max Brandes	Simon Sorg	
Maximilian Aschenauer	Solveig Fisher	
Michael Vogel	Sophie Sondhelm	
Min-Woo Sang	Thea Bähnisch	
Mona Giuliani	Theodor Körner	
Needet Özsuyolcu	Theodor Pyl	
Nikos Papadopoulos	Tilly Schanzen	
Nils Stensen	Tom Rink	
Norbert Löffler	Urho Kekkonen	
Oswald Kanzler	Ursula Götze	
Paul Bollfrab	Walter-Erich Schäfer	
Paul-Jonas Meier	Walter Kyllmann	
Paula Herzog	Wilhelm Berg	
Peter Chr. Hansen	Wilhelm Mensinga	

Appendix 6: List of spelling items

Note: This list is not yet finalized.

A.G.I-Fonds	Ärztetag	BNP-Töchter	crunchy
ABM-Mittel	Äskulap	Borely	Czerwensky
ABS-Systeme	Ästhetik	Boß	D2-Netzes
Abschluß-Booms	ATX-Index	Bottomley	DAX-Future
adäquat	Ausmaß	Boutiquen	DAX-Werte
AEG-Olympia	Außendienst	Bouygues	Day-Trading
AG-Exportquote	äußerlich	BQP	Delhaize "Le Lion"
Ägypten	Äußerung	C-Klasse	DePfa-Bank
AI-Zentrale	Babcock-BSH	CAC-40	Dialyse
Airways	Bahn-AG	CC-Bank	Dollar-Fixing
Albertson's	Banksystems	CD-Player	DSD-Engagement
Allied Domecq	Banque	Chefsyndikus	Dudley
Alphandery	Barclays	Chip-Typen	DVFA-Ergebnis
AMB-Aktien	BASF-Aktie	Chrysler	Dyckerhoff
Analyse	Bau-AG	Ciba-Geigy	Dynamik
Analytik	Baxter's	City-Lagen	Dynastien
Änderung	Bayern	Clichy	Dywidag
Ängste	BayernLB	Cliequot	EDV-Systeme
anonym	Bayernwerk	Co-Direktor	EG-Land
Anschluß	Bayreuth	Communiqué	EG-Partner
Anthony	Beta-Group	Company	Eigendynamik
Äpfeln	Bewußtsein	Compaq	Einfluß
APO-Zeit	Bleyer	Comsys	Elf-Sanofi
		CP-Markt	Eschwey
		Crédit-Lyonnais	Euro-Disney

Ex-Cell-O	Hydranten	KS-Abschluß	Nagoya
Exportquote	Hygiene	L'Oréal	Nasdaq
Finanz-AG	Hypo-Bank	Lacarte-Muro	New York
Finneß-Kur	Hypothek	Läbker	Niederbayern
Frequenz	Hyundai	Leybold	Norsk Hydro
Freitag	ICE-Züge	Lindsay	NYSE-Index
G7-Gipfels	Ifo-Bericht	Linotype	Oberbayern
GATT-Paket	Intercity	Lloyds Bank	Ödipus
Geldsystem	J-League	Lobbyisten	Öffnung
gelyncht	J. Sainsbury	Lyonnais	Öko-Institut
Germany	J.C. Penney	Lyriker	Öko-Welle
Gesamt-IVG	Jacques	LZB-Chef	Ökologie
GfP-Beteiligung	Jean-Claude	Malaysia	Ökonom
Gießen	Jean-Yves	Marken-Pkw	Ökonomie
Goodyear	Jeffrey	Maynard	Ölmarkt
H-Milch	Jersey	Mayonnaise	Ölpreise
Hapag-Lloyd	Kanofsky	Maystadt	Ölreserven
Hayashi	Katalysator	McDonald's	Ötanker
HDTV-Qualität	Katsuya	McKinsey	Olympia
Hillary	Kellogg's	Mexico City	Opel-System
HK-Dollar	Kinoqualität	Mickey	Österreich
Holiday	Kleyboldt	Micky-Rummel	ÖTV-Sprecher
Hollywood	Klub-Videos	Modell-Mix	Pennsylvanien
Honeywell	Konsequenz	Moody's	physischen
Humphrey	Kosyrew	Mythos	Poor's

PR-Leute	Rußland	Synthese	Vierzylinder
Priebnitz	S&P-Index	Syrien	VW-Käfer
Privat-TV	S-Bahn	System	Walt Disney
Projekt-AG	S-Klasse	Systeme	Wang-B-Aktien
Prototypen	Safeway	SZ-Tabelle	Weißbrüland
Psyche	Saint Quentin	Tarifsystem	WestLB-Chef
Psychologie	SAT-1	Thierry	Whisky
publicity	Schreyer	Thyssen	Women's
Quadrat	Solvay	Thyssengas	Wybert
Qualität	SPÖ-Chef	Tietmeyer	Xylophon
Quelle	Squash	Times-Index	Yachthafens
Quartal	Stand-by-Konzept	Toyota	Yankee
Quarz	Stanley	Toyota-Konzern	Yasushi
Quelle-Gruppe	Styling	Toyota-Werk	Yen-Anstieg
Rallye	Suntory	Toys "R" Us	Yen-Kurs
Raumsysteme	Survey	Treasury	Yokohama
Raytheon	Süßstoff	Tschernobyl	Yomiuri
Reader's	Sydney	TÜV-Prüfer	Yoshiro
Recycling	Symbol	typisch	Yung-Hsiang
Regelssysteme	Sympathie	U-Bahn	Yvette
Rheydt	Symptome	Uruguay	Yvonne
Rhône-Poulenc	synchron	US-Treasury	Zynismus
Rhythmus	syndikus	US-Überschuß	Zypern
Rolls-Royce	Syndrom	Valley	
Roussel-Uclaf	Synergie	VdK-Modell	

Appendix 7: Sample Prompt Sheet

The following pages contain a sample prompt sheet. The items in angular brackets, e.g. <B1>, indicate which item is being recorded at this point. These items are not printed on the prompt sheet.

