

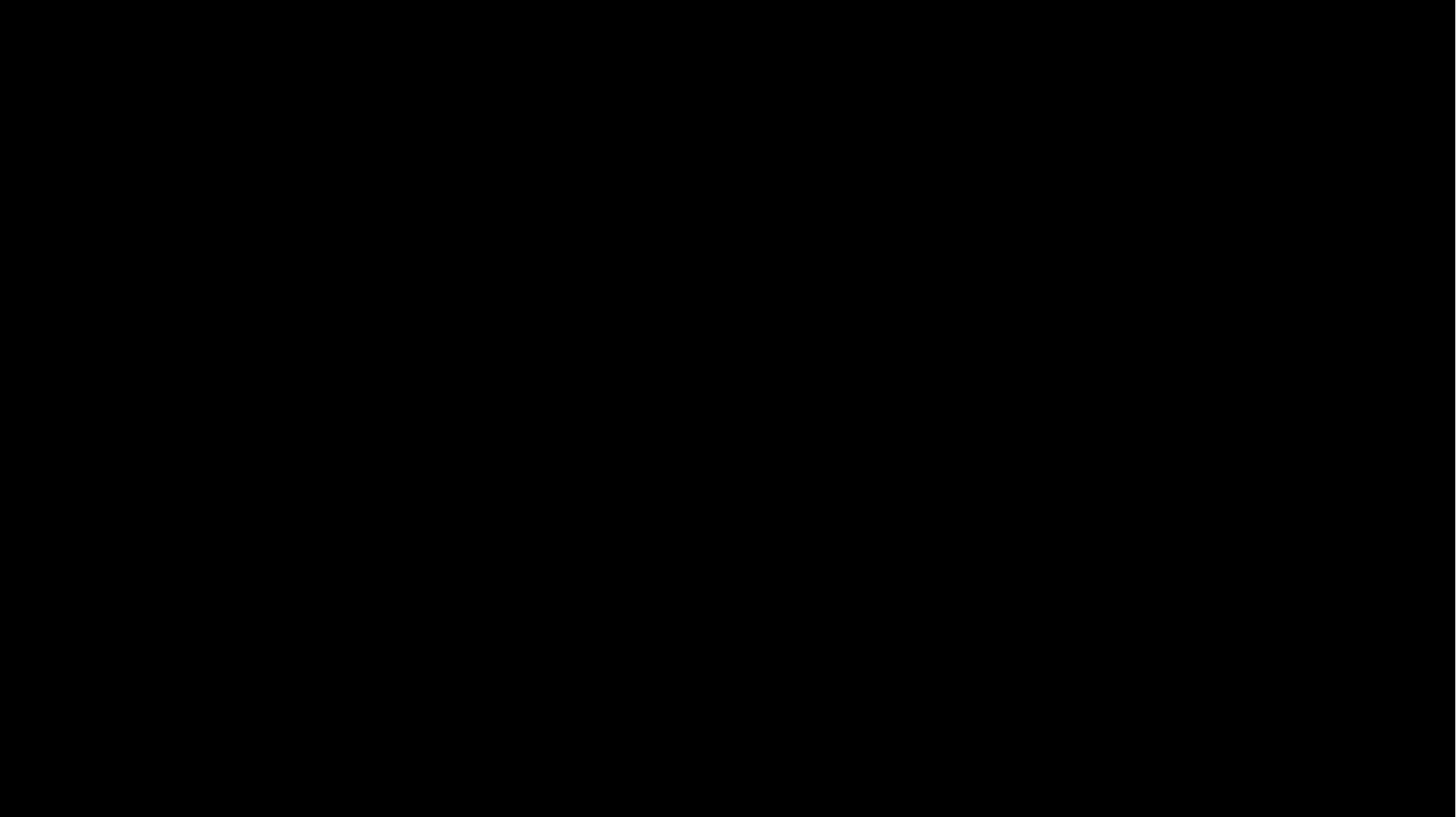
Lexical resources for Enggano, a threatened language of
Indonesia

Crafting connectivity: A user-centered approach to developing a web-based system for historical and contemporary Enggano language

Cokorda Pramatha

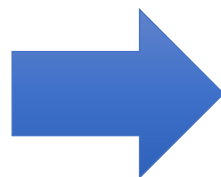


Centre for Interdisciplinary Research on the Humanities and Social Science (CIRHSS)



Background

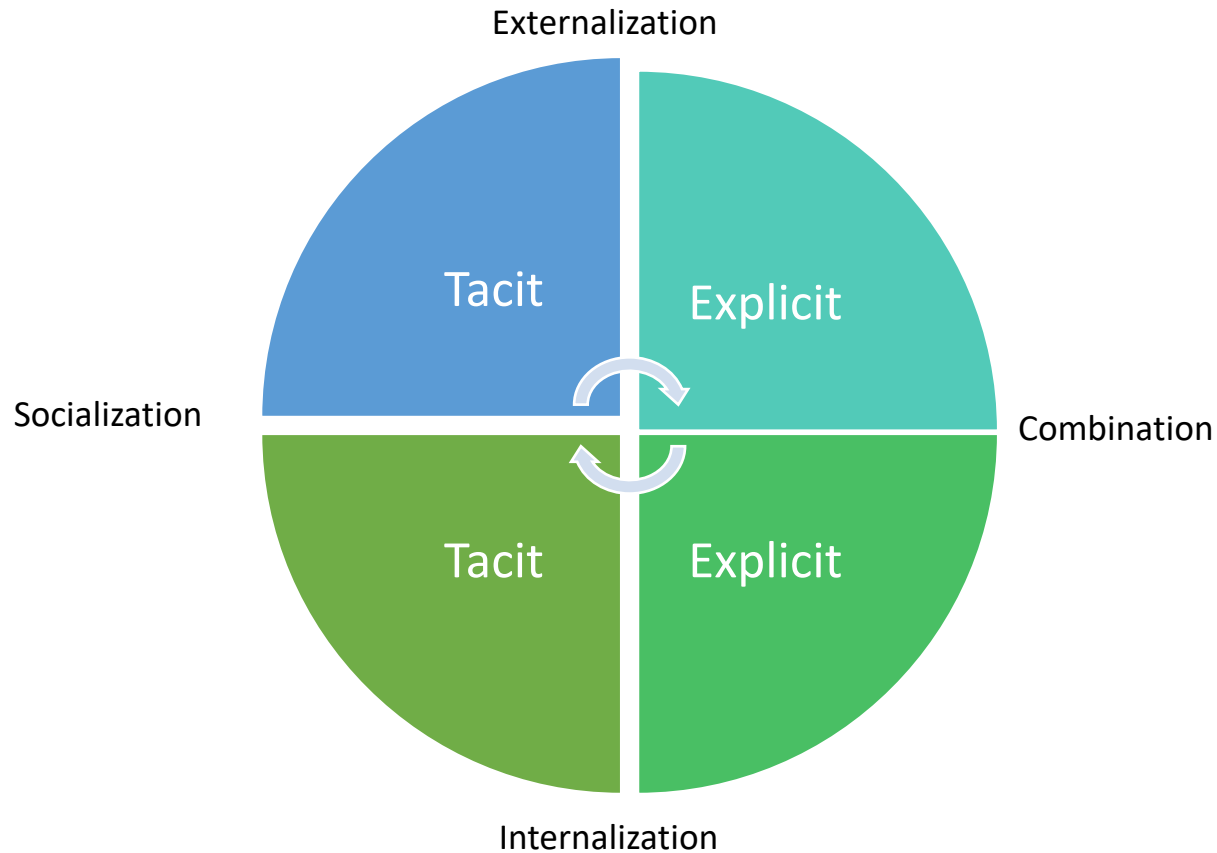
- Indonesia has more than 600 ethnic groups (250 M people)
- 719 mother-tongue language → 13 have vanished
- Mother-tongue language:
 - Beliefs
 - Philosophical values
 - Rules
 - Traditions
- Less young generation utilize the mother-tongue language
 - National language
 - Regulation
 - Limited resources



Not only language structural aspect, but **cultural and historical knowledge**



Knowledge Spiral



NONAKA, I. & TAKEUCHI, H. 1995. *The knowledge-creating company: How Japanese companies create the dynamics of innovation*, Oxford university press.

Tacit knowledge:

- Knowledge that based on individual experience
- Deeply embedded
- Hard to express and explain
- Not yet articulated
- Practical know-how knowledge.

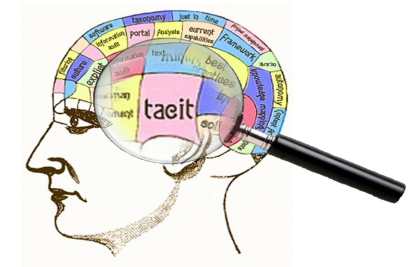
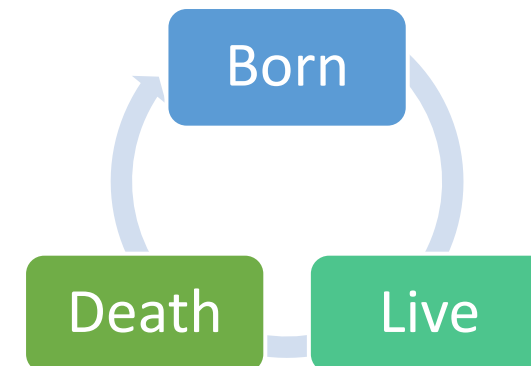


Image source: <http://www.enterrasolutions.com/media/tacit-knowledge-clear-02.png>



Enggano Language

- Located off the southern coast of Sumatra
- Enggano language is a mother-tongue language that is used by locals of Enggano island
- The language is considered as an endangered language with less than 50% of Enggano island's people able to utilise the language

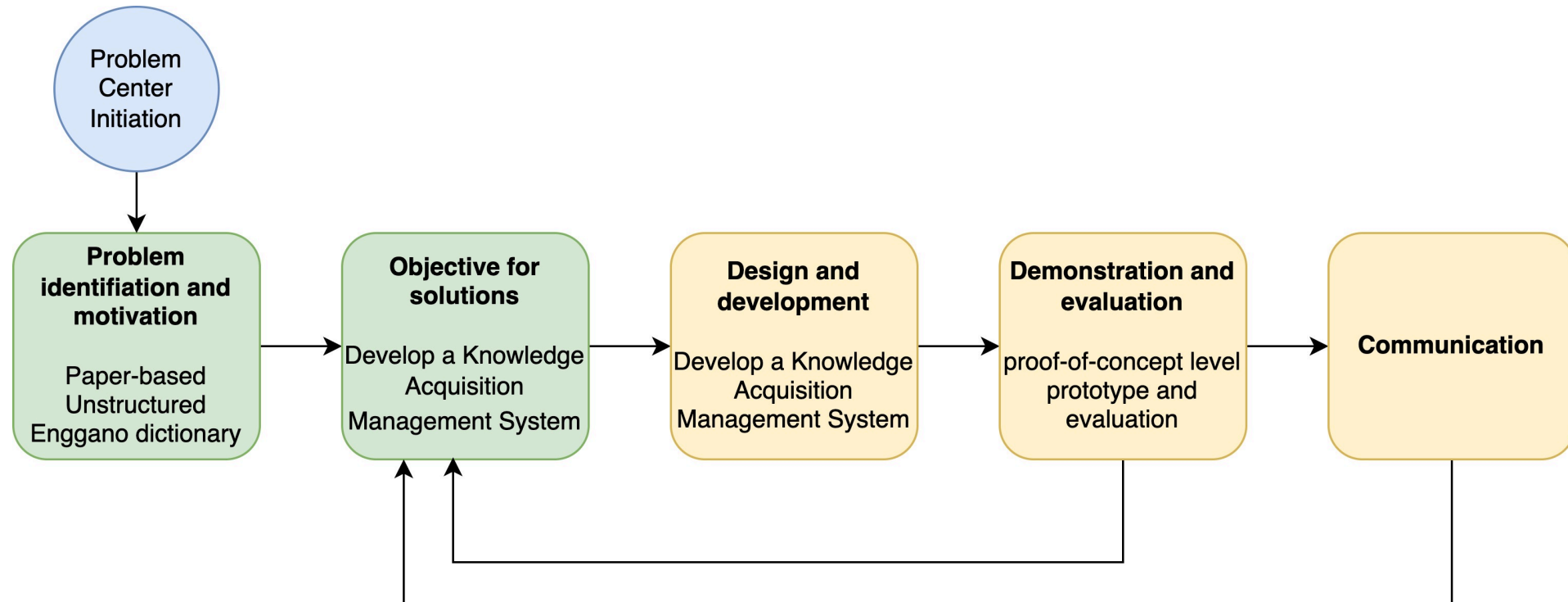


Project Aims and Significance

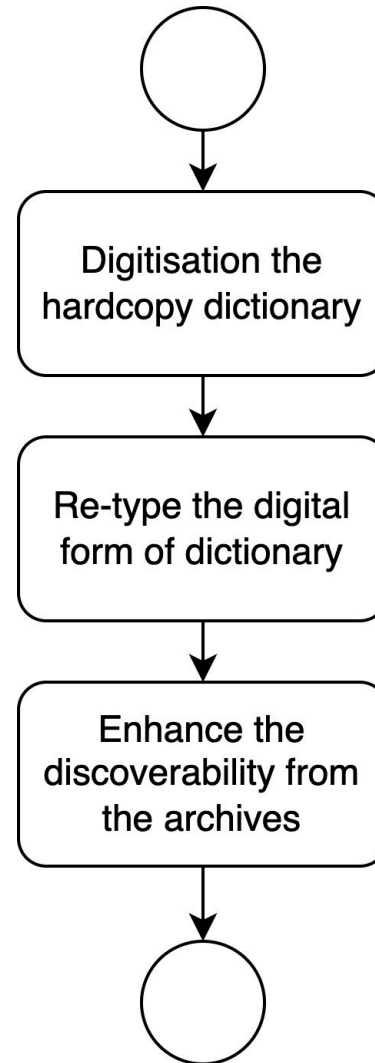
- To preserve, protect, and continue the use of the Enggano language by adopting modern technology that can be utilized by the younger generation
- Not only people that live in Enggano island but also others who live outside the island
- Develop a digital tool to learn, preserve, and continue the language
- Focuses on
 - Developing a knowledge acquisition management system that allows multiple users at the same time to contribute to populating data to the system.
 - Developing a web-based system for historical and contemporary Enggano language
- The extensive use of Information Technologies among people

Design Science Research Methodology (DSRM) Approach

- Developing an Information Technology (IT) artefact to solve the problem.



Digitisation Process



Veröffentlichungen des Seminars für Indonesische und
Südseesprachen der Universität Hamburg

Band 14

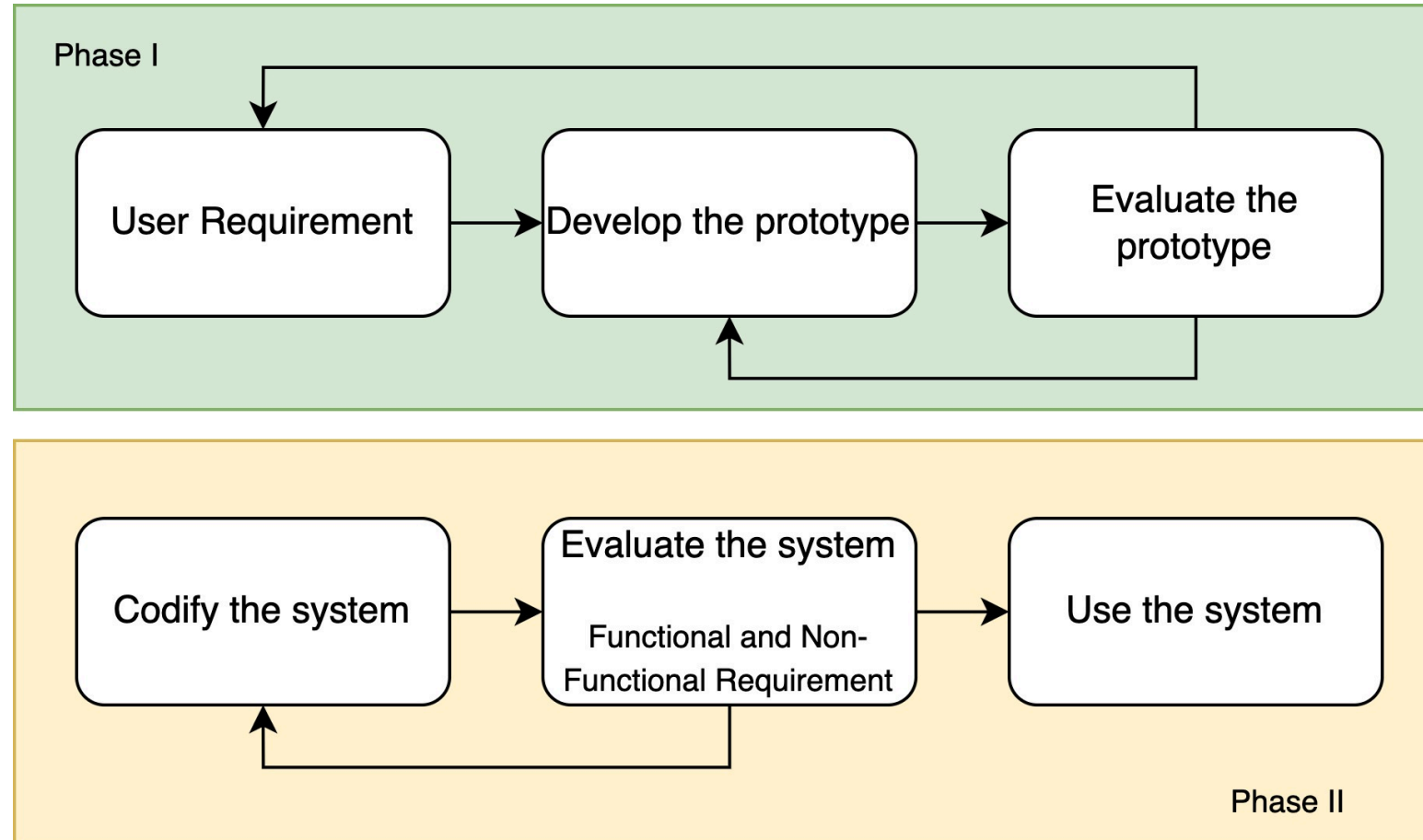
Hans Kähler †

ENGGANO-DEUTSCHES WÖRTERBUCH

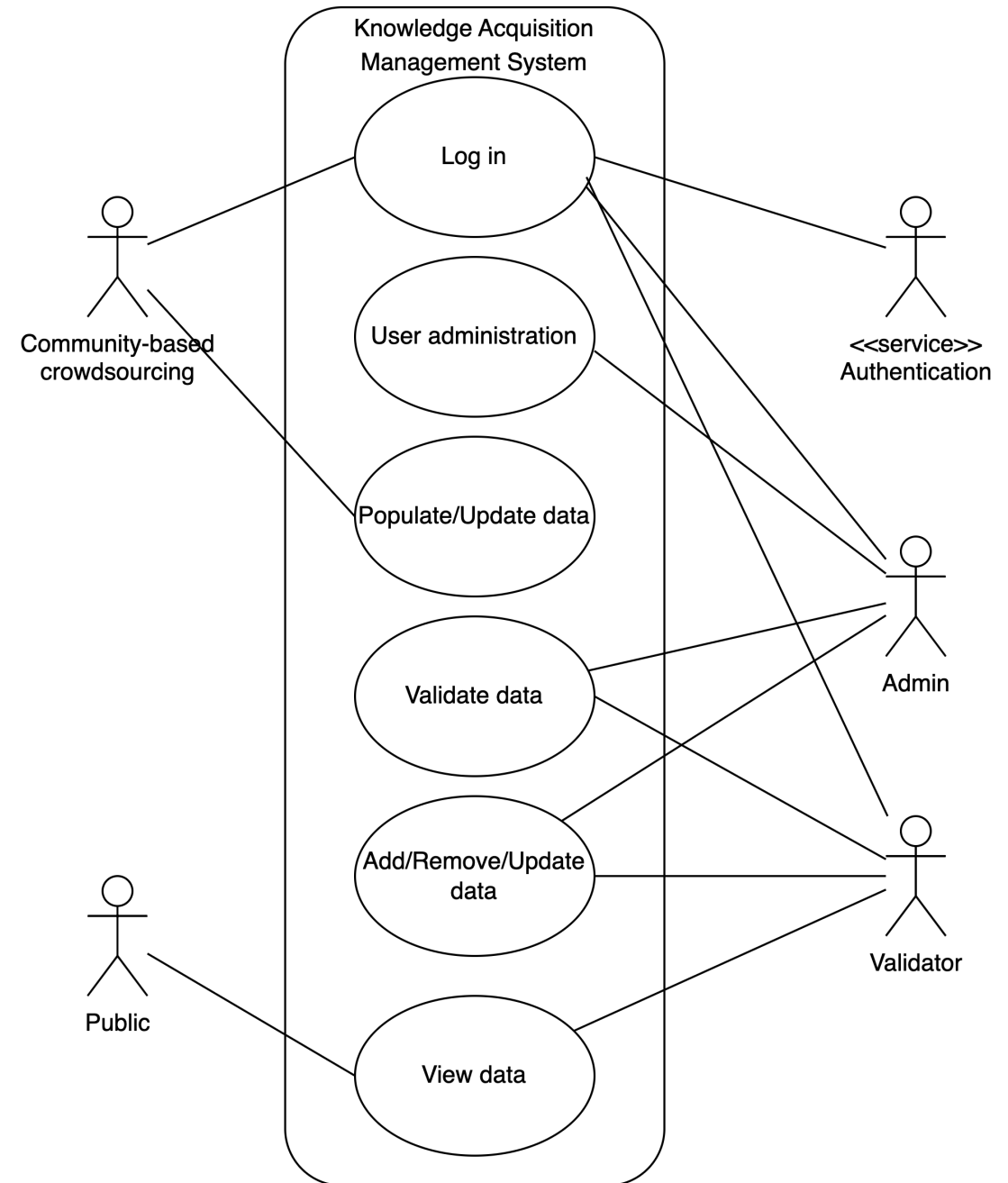
aus dem Nachlaß herausgegeben
und mit einem Deutsch-Enggano-Wörterverzeichnis
versehen von
Hans Schmidt

DIETRICH REIMER VERLAG · BERLIN · HAMBURG

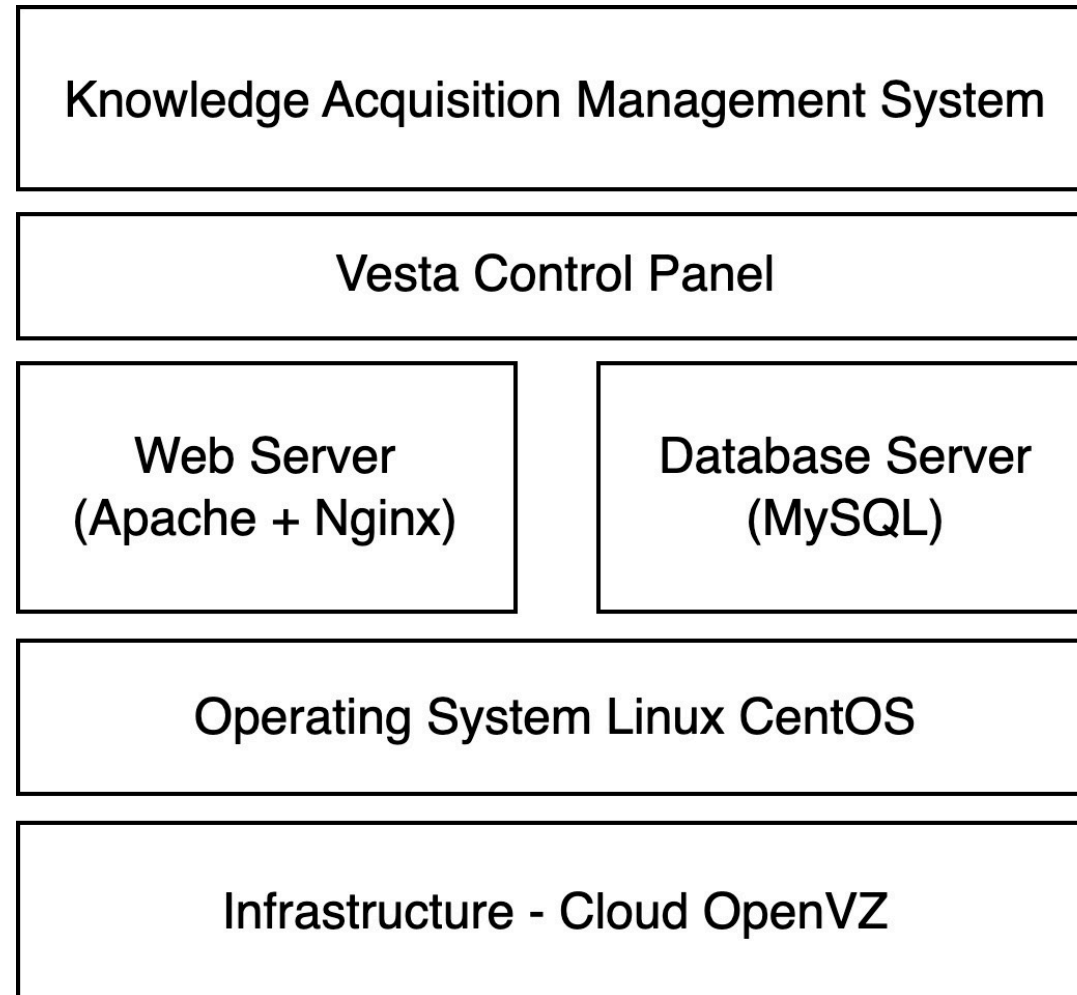
Prototyping System Development



Use Case Diagram



System Architecture



Fields in DB

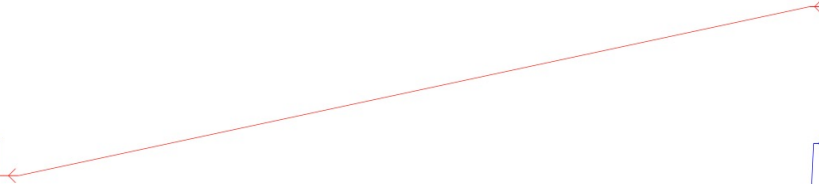
	A	B	C	D	E	F	G	H	I	J
	ID	STEM (<i>bentuk/kata dasar</i>)	VARIANT_STEM (<i>varian</i>)	SOURCE WORD (kata asal ditunjukkan dengan tanda "<" [misalnya "(< hora)"])	SOURCE WORD LANGUAGE (bahasa asal kata [jika ada]. Ditunjukkan dengan singkatan huruf kapital)	STEM/VARIANT_GERMAN (Bahasa Jerman bentuk dasar [dan variannya jika ada])	STEM/VARIANT_INDONESIAN (Bahasa Indonesia bentuk dasar [dan variannya jika ada])	EXAMPLES (<i>contoh bentuk turunan, dan kalimatnya</i>)	VARIANT_EXAMPLES (<i>varian bentuk kata turunan</i> [jika ada])	EXAMPLES_GERMAN (Bahasa Jerman bentuk kata turunan/frasa/kalimat pada Kahler)
1										
2	bisa otomatis?	stemX	X-1		AR (Arabic)	G-1	I-1	StemX	X-1	1
3			X-2		BAR (Bare'e [Austronesian, 'G-2	G-2	I-2	StemX	X-2	2
4			X-3		BI (Bahasa Indonesia)			StemX	X-3	3
5			...		Bugi (Buginese [Austronesian, Sulawesi])			...		
6					MKB (Minangkabau [Austronesian, Sumatra])					
7					ML (Malay [now BI])					
8					Mtw (Mentawai [Austronesian])					
9					NJV (New Javanese [Austronesian])					
10					NL (Dutch)					
11					PAN (Proto-Austronesian)					
12					PMP (Proto-Malayo-Polynesian)					
13					POC (Proto-Oceanic)					
14					Sd (Sundanese [Austronesian, Java])					
15					Sich (Sichule [Austronesian, Sumatra])					
16					Sim (Simalur [Austronesian])					
17					SMTw (Sudmentawai [South Mentawai])					

Sinonim (equal to) source word hanya STEM

Relational DB

stem
stem_id
kms_Alphabet
kms_page
kms_entry_no
stem_form
stem_GermanTranslation
stem_homonymID
stem_formVarian
stem_GermanTranslationVariant
stem_dialectVariant
stem_etymological_form
stem_etymological_language_donor
stem_loanword_form
stem_loanword_language_donor
stem_source_form
stem_source_form_homonymID
stem_crossref
stem_remark
stem_complete
create_by
cerate_date
update_by
update_date
used_time

stem_example
example_id
stem_id
example_form
example_GermanTranslation
example_variant
z_kuisiner_kriteria
kui_id
kuik_pilihan
kuik_keterangan
example_loanword_language_donor
example_source_form
example_source_form_homonymID
z_kuisiner
kui_id
kui_nama
kui_header
kui_keterangan
kui_nourut
z_kuisiner_pertanyaan
kuip_id
kui_id
kuip_pertanyaan
kuip_tipe
kuip_urutan
ks_id



Relational DB

Server: localhost » Database: enggano_kamuv2 » Table: stem

Number of rows: 25 | Filter rows: Search this table | Sort by key: None

stem_id	kms_Alphabet	kms_page	kms_entry_no	stem_form	stem_GermanTranslation	stem_homonymID	stem_formVarian	stem_GermanTranslationVariant	stem_dialectVariant
10_1683772590	K	157	1	ekobaE'a	Jagdspeer				
10_1683772847	K	157	2	ekobarulku	Fischart				
10_1683773019	K	157	3	ekobituu	SchweiÄÿ				
10_1683773149	K	157	4	kobu					
10_1683773886	K	157	5	kode					kore
10_1683773971	K	157	6	ekodekode uaparaa	Vorderseite des Oberschenkels				
10_1683775703	K	157	7	kodi					
10_1683775900	K	157	8	kadilo	ul'berschatten				
10_1683776956	K	157	9	kodo					
10_1683777395	K	158	1	kodo				2	
10_1683777480	K	158	2	ekodoko	spanischer Pfeffer				
10_1683777605	K	158	3	kodu					
10_1683777741	K	158	4	kolfE'eif					
10_1683778683	K	158	5	ekoE'eE'e	Teufel, Dal'mon(in), Gespenst; Fremdling			etoE'eE'	etoE'eE' (DIA)
10_1683778804	K	158	6	koelhe					
10_1684025477	K	158	7	ekoE' epalfnulj	Vogelart				ekoE'upalfnulj

Knowledge Acquisition System

- Available online at <https://enggano.oss.web.id>

Graphics User Interface (GUI) – User Management

















Manajemen Users Menu / Manajemen Users

Kamus Bahasa Bali

Data User

[Tambah User](#) [Tambah User Multiple](#)

10 entries per page

Id	Name	Email	Username	User Group	Status	Opsi
1	Gusde Sarasvananda	Gusde@gmail.com	gusde	Admin	Active	 
2	Admin	Admin@gmail.com	admin	Admin	Active	 
4	Unud_0001	admin@kamus.web.oss.id	unud_0001		Active	 
5	Unud_0002	admin@kamus.web.oss.id	unud_0002		Active	 
6	Unud_0003	admin@kamus.web.oss.id	unud_0003		Active	 
8	Yul Fulgensia Rusman Pita	rusman.pita@gmail.com	rusman.pita	User Input	Active	 
9	I Gede Semara Dharma Putra	dharma.putra@gmail.com	dharma.putra	User Input	Active	 
10	Putu Dea Indah Kartini	indah.kartini@gmail.com	indah.kartini	User Input	Active	 

Graphics User Interface (GUI) – Stem Management

Data Stem


Tambah Stem


25 entries per page


Search...


Aplhabet	Page	Stem	Stem Form	Create by	Create Date	Opsi
K	140	21	ekibáha	I Gede Semara Dharma Putra	2023-05-10 03:36:14	  
K	141	1	ekibo	I Gede Semara Dharma Putra	2023-05-10 03:37:12	  
k	177	6	kue	Fitri Koemba	2023-05-10 03:37:54	  
k	104	7	ka?a:ɔnã?ã	Putu Wahyu Widiatmika	2023-05-10 03:38:26	  
K	141	2	kici	I Gede Semara Dharma Putra	2023-05-10 03:38:36	  
K	141	3	ekici?o ukoyo	I Gede Semara Dharma Putra	2023-05-10 03:39:17	  
k	112	7	kahapii	Ida Bagus Made Ari Segara	2023-05-10 03:41:31	  
k	177	7	ekue	Fitri Koemba	2023-05-10 03:41:34	  
K	141	4	kid-	I Gede Semara Dharma Putra	2023-05-10 03:43:46	  
k	130	12	keho	Yul Fulgensia Rusman Pita	2023-05-10 03:44:40	  
K	141	5	ekidai	I Gede Semara Dharma Putra	2023-05-10 03:45:24	  
K	141	6	kidaiya	I Gede Semara Dharma Putra	2023-05-10 03:45:55	  
k	166	10	ko?o	Wulan Lestari	2023-05-10 03:47:17	  


Graphics User Interface (GUI) – Populate Stem

 Total Stem **2953**

 Total Example **5034**

 Recent Stem **eʔəhā**

 Total Users **17**

 Hello cokorda

Metadata for the Entry

Alphabet Page in Kähler

Entry No

Input Stem

Stem Form

German Translation

homonymID

Varian

GermanTransVarian

Dialect Variant










Etymological Form

Etym. Lang. Other Language

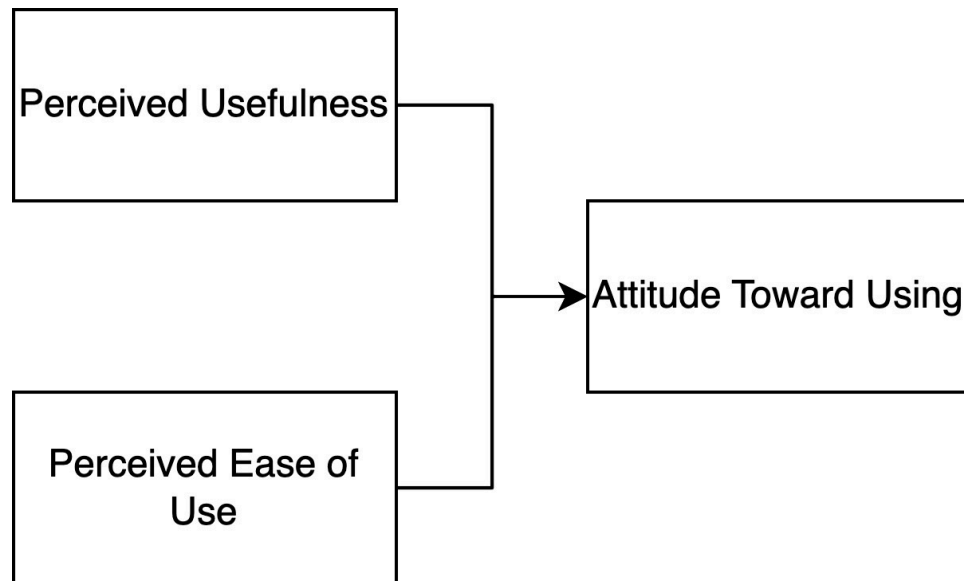
Loanword Form

Loanword Donor Lang. Other Language

Recent Stem

-  **eʔəhā**
by Gede Primahadi
-  **ədəhəa**
by Gede Primahadi
-  **ʔədəhəa**
by Gede Primahadi
-  **ʔədəha**
by Gede Primahadi
-  **ʔədə**
by Gede Primahadi
-  **ʔədə**
by Gede Primahadi
-  **ədəi**
by Gede Primahadi
-  **ədəʔa:ə**
by Gede Primahadi
-  **ədəʔa**
by Gede Primahadi

Non-Functional: Technology Acceptance Model (TAM)



Dimension	Score
Perceived Usefulness	6,02
Perceived Ease of Use	6,17

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS quarterly*, 13(3), 319-340.

Re-typing

2 months

8 people

292 pages

9040 records



168

stem form
 1 ekō'oi'ifi → homomim id
 Muschelart german translation
 2 kō'ōi'ifi → example form
 - kahakō'ōi'ifi → schnarchen german translation
 - kahakō'ōi'ifi? → zum Schnarchen benutzen german translation
 - ?ua kahakō'ōi'ifi? → epanū'fi ich schnarche mit german translation
 meiner Nase
 - eahakō'ōi'ifi → das Schnarchen (H16 & (j) ahakoqie crossref
 (Leven, Ziel) → Ger. in cross ref.
 - enāhākō'ōi'ifi? → d zum Schnarchen Benutzte german translation
 3 ekō'ōi'ifi → Homomim id
 Schangegend german translation
 4 ko'ōjka = ko'aixa: iko'ōjxāhadia ói'ie heute Nacht
 (S 29b) → cross ref ✓ example form german translation
 5 ekō'ōi'ifi → paragraph id. eaw
 weiße Haare german translation stem
 - hō mā'ā'ā'ōi'ifi? → bereits weiße Haare haben german translation
 6 ko'ōka'a → German stem
 - kabuko'ōka'a → er betet german translation
 - hō buko'ōka'a → gebetet haben
 - ?ukubo'ōka'a → ich beta
 - earo'ōka'a → das Beten
 7 ekō'ōkā'ā → Kern german translation
 8 kō'ō kapū = kō'ō kapū Mitternacht german translation
 9 eko'ōkayo (arch, (13,20) = ekiko'ōka Baumart german translation
 10 eko'ōki Rückseite, Rückwand german translation
 - iko'ōki → hinter german translation
 - eko'ōki ūdu → Mäcken (Rückseite des Kopfes) stem
 11 eko'ōko'o → stem variant
 = ekō'ō[kō'ō] (Sim tungkul Nipahpalme, Dachbedeckung
 (ML [atap] aus deren Blättern (DEC 246o kokok-kokok,
 Heyne 21/672 eko'ōk-ko'ōk Nipa fruticans Thunb.) crossref
 12 ko'ōlixi = ko'ōdixi variant stem
 13 ekō'ōmā → german translation
 Vorkbau, Veranda (H16 ko'ōma rustbank, slaapbank;
 koqogma ronde plaats destijds aangetroffen onder
 de woning (bijenkorfvorm), dienende tot bewaarplaats
 van mandjes en ander huisraad)

stem_id	kms_Alpha bet	kms_pa ge	kms_entry no	stem_form	stem_GermanTranslati on	stem_homon ymID	stem_formVa rian	stem_GermanTranslat ionVariant	stem_dialectV ariant
10_1683772590	K	157	1	ekobaÊ"á	Jagdspeer				
10_1683772847	K	157	2	ekobaruì?ku	Fischart				
10_1683773019	K	157	3	ekobituu	SchweiÄÿ				
10_1683773149	K	157	4	kobu					
10_1683773886	K	157	5	kode			kore		
10_1683773971	K	157	6	ekodekode uaparaa	Vorderseite des Oberschenkels				
10_1683775703	K	157	7	kodi					
10_1683775900	K	157	8	kadiì?o	uì"berschatten				
10_1683776956	K	157	9	kodo					
10_1683777395	K	158	1	kodo		2			
10_1683777480	K	158	2	ekodoko	spanischer Pfeffer				
10_1683777605	K	158	3	kodu					
10_1683777741	K	158	4	koìfÊ"eìf					
10_1683778683	K	158	5	ekoÊ"eÊ"e	Teufel, Daì"mon(in), Gespenst; Fremdling		etoÊ"eÊ"		etoÊ"eÊ" (DIA)
10_1683778804	K	158	6	koeì?he					
10_1684025477	K	158	7	ekoÊ"epalfnuìf	Vogelart		ekuÊ"upaìfnuìf		
10_1684025596	K	158	8	ekofifi	Nachkommen (schaft)		ekopipi		ekopipi (DIA)
10_1684029426	K	158	9	koìfhalf					

stem_crossref	stem_remark	stem_complete	create_by	create_date	update_by	update_date	used_time
	MODÈ?243 ecobal?, 172È? La lancia da caccia, varietal€ di quelle da guerra che descriverol€, el€ piu grossa, il ferro el€ piu€ solido, quasi sempre liscio o con tre uncinature come mostrano la fig.27 e la lettera D nella figura 47 (auf S.242). ...)	y	10	2023-05-11 02:36:30	NULL	NULL	00:00:56
H88È?278 kabaroekoe	ML ikan tadjieÂ²	y	10	2023-05-11 02:40:47	NULL	NULL	00:00:39
		y	10	2023-05-11 02:43:39	NULL	NULL	00:00:44
		y	10	2023-05-11 02:45:49	NULL	NULL	00:00:03
vgl POC nsola		y	10	2023-05-11 02:58:06	NULL	NULL	00:00:01
G68		y	10	2023-05-11 02:59:31	NULL	NULL	00:00:16
s kedi, kuhedi		y	10	2023-05-11 03:28:23	NULL	NULL	00:00:45
s kudiì?oÂ·oÈ?i; G43		y	10	2023-05-11 03:31:40	NULL	NULL	00:00:00
		y	10	2023-05-11 03:49:16	NULL	NULL	00:00:28
		y	10	2023-05-11 03:56:35	NULL	NULL	00:00:14
Heyne 53/1862 koro-koro Piper nigrum)		y	10	2023-05-11 03:58:00	NULL	NULL	00:00:11
		y	10	2023-05-11 04:00:05	NULL	NULL	00:00:49

A web-based system for historical & contemporary Enggano language



Data Sources

Historical

- **Hans Kahler Dictionary** → digitized and collected by Dr. Gede Primahadi Wijaya Rajeg, University of Oxford/Udayana University
- **Old Wordlist** → digitized and collected by Dr. Daniel Krauß, CNRS-Lattice, ENS - Université Sorbonne nouvelle



Contemporary

- Collected by Dr. Charlotte Hemmings, University of Oxford



cognate_id	year	words	indonesian	english	semantic_field	source	notes
1	1987	kipuaka	berangkat	depart	movement	KΓāhler 1987	NA
1	2011	ki-pokah	berangkat	about to go	movement	Yoder 2011	NA
2	1879	ietebe	di atas	above	position	Oudemans 1879	NA
2	1891	itΓĒbΓĒ	di atas	above	position	Helfrich & Pieters 1891	NA
2	1891	itΓĒbΓĒ	di atas	above	position	Helfrich & Pieters 1891	NA
2	1894	itcΓ@be	di atas	above	position	Modigliani 1894	NA
2	1895	itΓĒbΓĒ ; dΓĒbΓĒ	di atas	above	position	Stockhof 1987	NA
2	1987	itebe ; idebe	di atas	above	position	KΓāhler 1987	NA
2	2011	K”i-tem	di atas	above	position	Yoder 2011	NA
2	2019	iteb	di atas	above	position	Aron 2019	NA
3	1987	γapaua	di atas	above	position	KΓāhler 1987	NA
4	2019	bak kareb	abses	abscess	diseases	Aron 2019	NA
5	2011	ken	abses	abscess	diseases	Yoder 2011	NA
6	1894	echienia	melimpah	abundant	quantity	Modigliani 1894	NA
6	1987	kikЙ™К”Й™ka	melimpah	overfilled	quantity	KΓāhler 1987	NA
7	1891	aoenakBI ΓĒabaa	kecelakaan	accident	other	Helfrich & Pieters 1891	NA
7	1891	aoenakBI ΓĒabaa	kecelakaan	accident	other	Helfrich & Pieters 1891	NA
8	1891	pakoekoe	seberang	about	directions	Helfrich & Pieters 1891	NA
8	1891	pakoekoe	seberang	about	directions	Helfrich & Pieters 1891	NA

Landing Page



[Home](#) > [Search](#) >

Enggano Digital Dictionary System

A B C D F G H I J K L M N O P Q R S T U V W X Y Z

All (Contemporary + Historic)

Search

All

About Enggano

Enggano, with about 1500 speakers, is spoken on Enggano Island, off the southern coast of Sumatra, Indonesia, with a population of about 4000. Enggano is classified as "threatened": only the elder generation are fully competent and fluent speakers. Many children speak Indonesian and little to no Enggano. Intensified contact with non-Enggano speakers is likely to continue and spread throughout the island, to the detriment of Enggano.

[Click here for more information](#)



Australian
National
University



Searching - Historical



[Home](#) > [Search](#) >

Enggano Digital Dictionary System

A B C D F G H I J K L M N O P Q R S T U V W X Y Z

Historical (old wordlist +... ▾)	<input type="text" value="Kipuaka"/>	<input type="button" value="Search"/>
All ▾	<input type="text" value="category"/>	

About Enggano

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Output - Historical



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Engano Digital Dictionary System

A B C D F G H I J K L M N O P Q R S T U V W X Y Z

Year	Words	Indonesian	English	Semantic	Source
1987	kipuaka	berangkat	depart	movement	K\shler 1987
2011	ki-pokah	berangkat	about to go	movement	Yoder 2011

Rate the results



Searching - Contemporary



[Home](#) > [Search](#) >

Enggano Digital Dictionary System

A B C D F G H I J K L M N O P Q R S T U V W X Y Z

Contemporary ▾

pakoekoe

Search

All ▾

category

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[Click here for more information](#)



Output - Contemporary



[Home](#) > [Search](#) > [Results](#)

Engano Digital Dictionary System

A B C D F G H I J K L M N O P Q R S T U V W X Y Z

1 pakoekoe

Makna

1) [n] seberang

Contoh: - Budi berada di seberang jalan
- Pulau seberang sangat indah

Turunan

qwertyuuiio; qwertyuuiio



Rate the results



Output - Browsing



[Home](#) > [Search](#) > [Browsing](#) > [A](#)

Enggano Digital Dictionary System

A B C D F G H I J K L M N O P Q R S T U V W X Y Z

Indonesia	Year	Words	English	Semantic	Source
abses	2019	bak kareb	abscess	diseases	Aron 2019
abu	1891	ГѐнаД•	ash	natural objects	Helfrich & Pieters 1891

Rate the results



Similar project



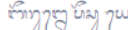

Hasil untuk pesu

1 pesu  [andap] /pe.su/

Makna

1) [v] keluar

Contoh:

-  berungné pesu yéh; keluar air dr lukanya;
-  suud majaguran, ia tusing bani pesu; setelah berkelahi, ia tidak berani keluar;

Turunan

kapesuang; mesu; mesuang; pesuaanga; pesu-pesuan; pesuang; pesuin; pamesuan; pepeson; mesuin;

Gabungan Kata

pesu mulih;

Pencarian Terkait

[pesuaanga](#) [pesu-pesuan](#) [pesuang](#) [pesuin](#) [pesu mulih](#)

Tingkatan Bahasa

- Alus singgih(asi)
- Alus sor(aso)
- Alus mider(ami)
- Mider(M)
- Andap
- Kasar(k)

Kelas Kata

- Adjectiva (a)
- Adverbia (adv)
- Nomina (n)
- Numeralia (num)
- Partikel (p)
- Pronomina (pron)
- Verba (v)

Daerah

- Badung (Bd)
- Bangli (Bgl)
- Buleleng (Bil)
- Gianyar (Gr)
- Jembrana (J)
- Karangasem (Ka)
- Klungkung (Kik)
- Tabanan (T)

ආචාර්ය ජාතිකානු

Thank you

