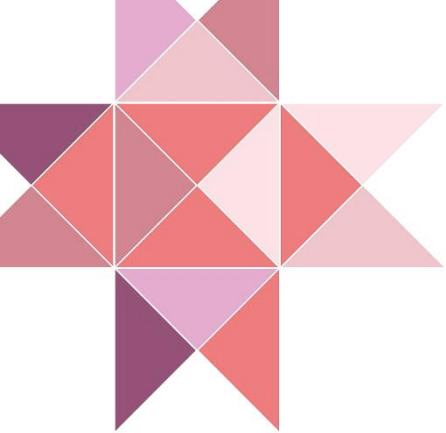


The Interplay

Nichesourcing the Uralic languages for the benefit of linguistic research and lingual societies

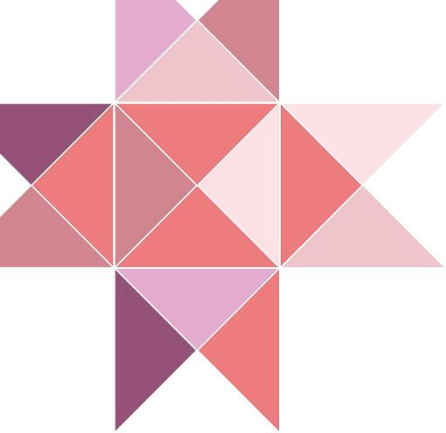
Jussi-Pekka Hakkarainen
Project Manager

DH2015
2.7.2015, Sydney



Overview of the Project

- The **National Library of Finland** is implementing the Digitization Project of Kindred (**Uralic**) Languages in 2012–15.
- Within the project we have digitized materials in 17 Uralic languages as well as developed tools to support the **1) linguistic research** and **2) citizen science**.
- Through this project, **1) researchers** will gain access to new corpora which they have not been able to study before and to which **2) all users** will have open access regardless of their place of residence.



Materials and Collection

- Within the project **National Library of Finland** has digitized and published around **1150 monograph** titles and more than **100 newspapers** titles.
- The online collection, **Fenno-Ugrica**, will consist of 110,000 monograph pages and 90,000 newspaper pages.
- The majority of materials belong to the collections of the **National Library of Russia** in Saint Petersburg.



Fenno-Ugrica is the National Library of Finland's digital collection of Finno-Ugric publications. The Fenno-Ugrica collection includes more than 1100 monographs and over 100 newspaper titles in 17 Uralic languages.

The material of Fenno-Ugrica has been produced by the National Library of Finland in the [Digitization Project of Kindred Languages](#), which is a part of [Language Programme](#) of Kone Foundation. The material Fenno-Ugrica collection belongs to the collections of the [National Library of Russia](#) (St. Petersburg), where the publications have been digitised. The digitised content of this collection is published based on the research on copyrights, which was conducted by Moscow-based copyright organization, [National Library Resource](#). The material in Livonian has been digitized by the [Institute of Estonian Language](#) in Tallinn.

Within the Digitisation Project of Kindred Languages, the National Library of Finland has developed an open source code OCR editor that enables the editing of machine-encoded text for the benefit of linguistic research. Permissions for the editing of the material of Fenno-Ugrica will be granted mainly for the researchers of Finno-Ugric languages and the permissions will be administrated by the Digitisation Project of Kindred Languages.

You may follow the progress via the [project blog](#).

Requests and enquiries: kk-fennougrica@helsinki.fi

Collections

- [Institute of Estonian Language](#) [63]
- [Periodicals](#) [5869]
- [Monographs](#) [1128]

Search Fenno-Ugrica

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KONEEN SÄÄTIÖ



Bukvari izoroin škouluja vart

Iljin, N. A.; Junus, V. I.; Ильин, Н. А.; Юнус, В. И.

The permanent address of the publication is <http://urn.fi/URN:NBN:fi-fe2013123010160>



Name: bx000010952.pdf

Size: 52.57Mb

Format: PDF

Description: User copy PDF
simplestats.downloads



[View/Open](#)



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Size: 222.9Kb

Format: Unknown

Description: Alto XML files of ...
simplestats.downloads



[View/Open](#)

Title: Bukvari izoroin škouluja vart

Alternative title: Букварь для ижорских школ

Author: Iljin, N. A.; Junus, V. I.; Ильин, Н. А.; Юнус, В. И.

Published: Moskova ; Leningrad : Riikin ucebno-pedagogiceskoi izdatel'stva, 1936

Subject: aapiset; inkeroisen kieli; ижорский язык

This Collection

- [Titles](#)
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- [By Issue Date](#)
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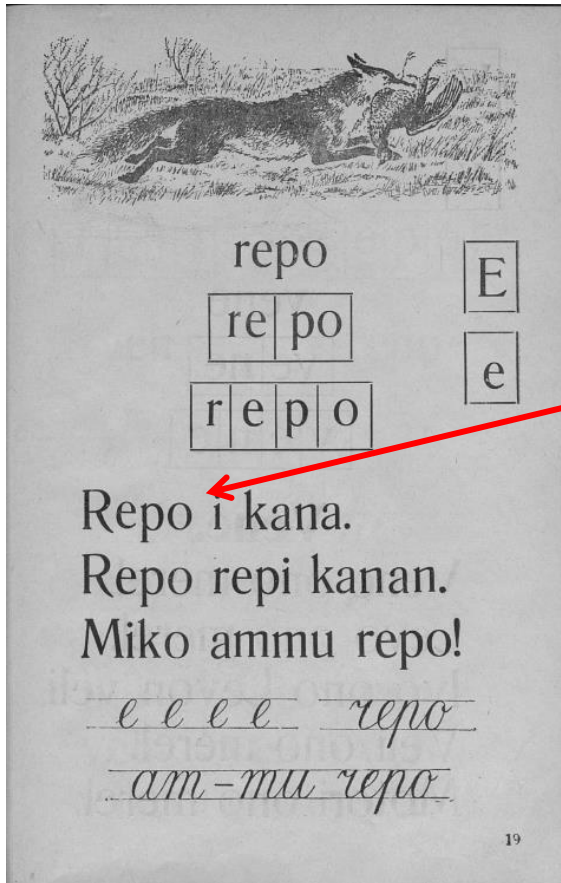
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KONEEN SÄÄTIÖ



Materials and Collection



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 </TextLine>

Languages of Publications

FO Baltic-Finnic

- FO1 Finnish
- FO2 Karelian
- FO3 Veps
- FO4 Ingrian
- FO5 Estonian
- FO6 Votic
- FO7 Livonian

FS Sami languages

- FS1 Western Sami
- FS2 Central Sami
- FS3 Eastern Sami

FU Ugric

- FU1 Hungarian
- FU2 Mansi
- FU3 Khanty

FP Finno-Permian

- FP1 Komi-Zyrian
- FP2 Komi-Permyak
- FP3 Udmurt

FW Finno-Volgaic

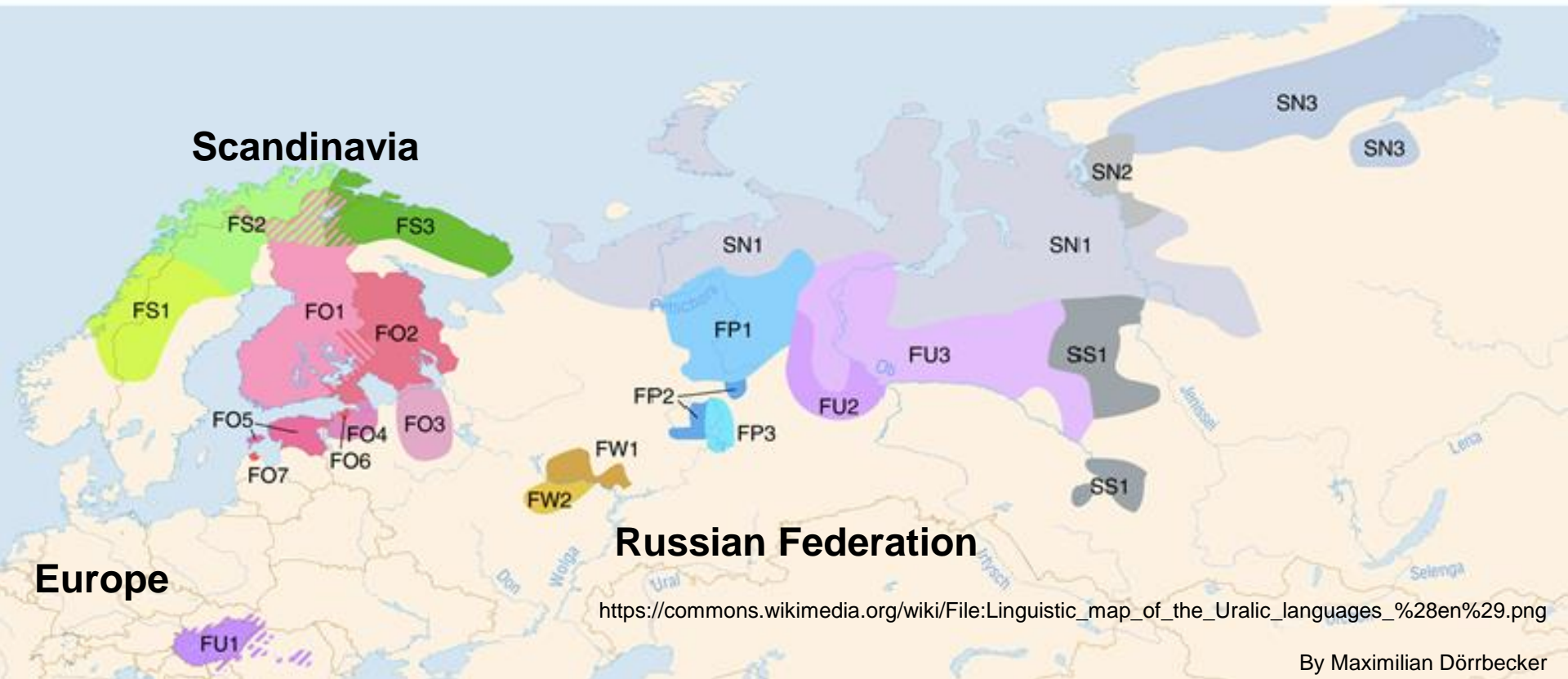
- FW1 Mari
- FW2 Mordvinic

SN Northern Samoyedic

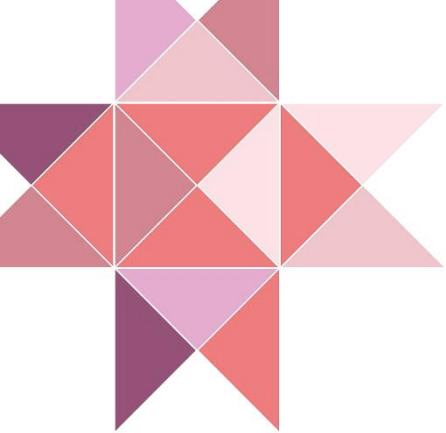
- SN1 Nenets
- SN2 Enets
- SN3 Nganasan

SS Southern Samoyedic

- SS1 Selkup



https://commons.wikimedia.org/wiki/File:Linguistic_map_of_the_Uralic_languages_%28en%29.png



Languages of Publications

Baltic Finns

- Ingrian
- Veps
- Karelian
- [Livonian]

Permic

- Udmurt
- Komi-Zyrian
- Komi-Permyak

Mari

- Meadow Mari
- Hill Mari

Sami

- Skolt

Samoyedic

- Nenets
- Selkup

Ob-Ugric

- Khanty
- Mansi

Mordvinic

- Erzyan
- Moksha
- (Shoksha)



Selection Criteria of Material

- After 1917, the languages were converted into a medium of **popular education, enlightenment** and **dissemination** of information pertinent to the developing political agenda of the Soviet state. The deluge of literature in 1920s-1930s suddenly challenged **the lexical orthographic norms** of the limited ecclesiastical publications from the 1880s.
- Newspapers were written **in orthographies** and in word forms that the locals would understand. Textbooks were written to address the separate needs of both the adults and children. New concepts were introduced in the language. This was the beginning of a **renaissance** and **period of enlightenment**.



Selection Criteria of Material

- The selection of the materials has been made in co-operation with the researchers and we used several criteria upon the selection of material:
 - genesis and consolidation period of literary languages
 - availability of material in Finnish libraries and institutions
 - online access to collections in Russia
 - locality – the languages of peripheries is more tempting
 - cost efficiency – loads of parallel titles (translations)
 - **No-one else would digitize and publish this material!**



Project and Linguistic Research

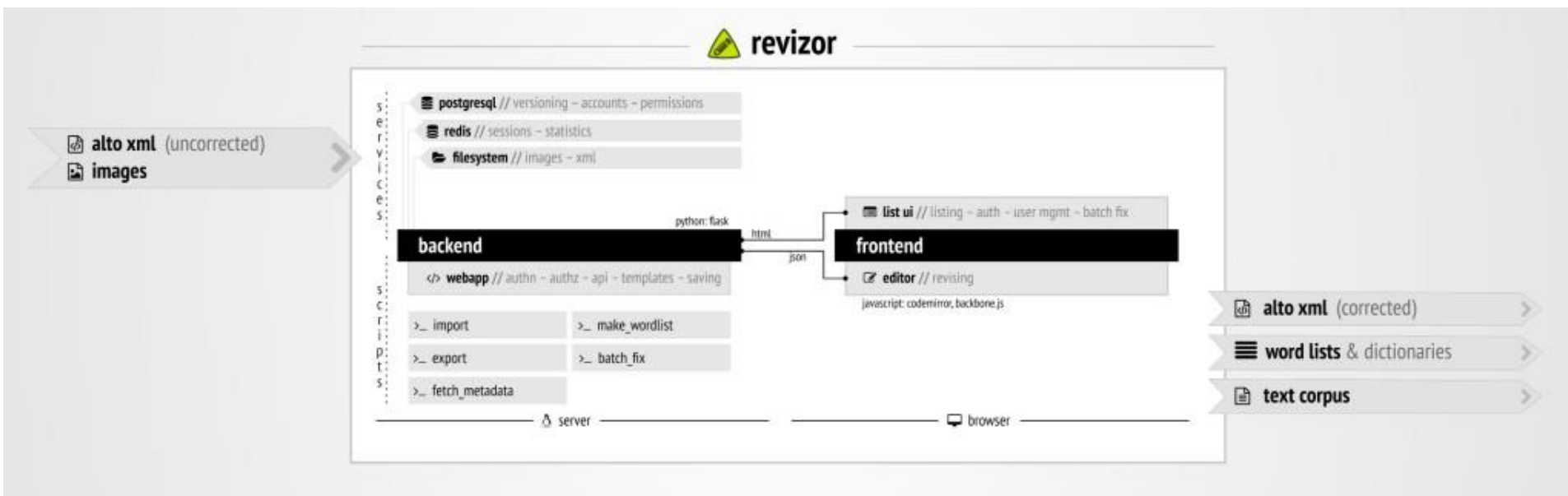
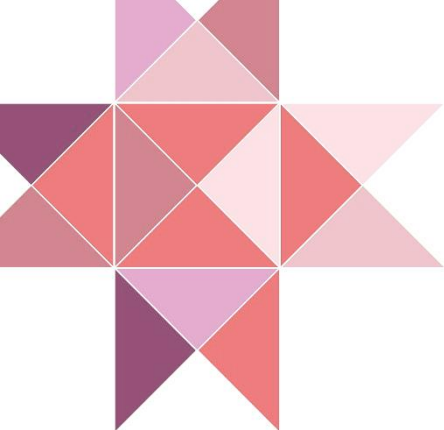
- The Digitization Project of Kindred Languages is also linked with language technology. The one of the key objectives is to **improve the usage and usability of digitized content**. During the project we are advancing methods that will refine the raw data for further use.
- The machined-encoded text (OCR) contain quite often too many mistakes to be used in research. **The mistakes in OCR'd texts must be corrected**. In order to meet the objective, we have developed an open source code editor that enables the editing of erroneous text.



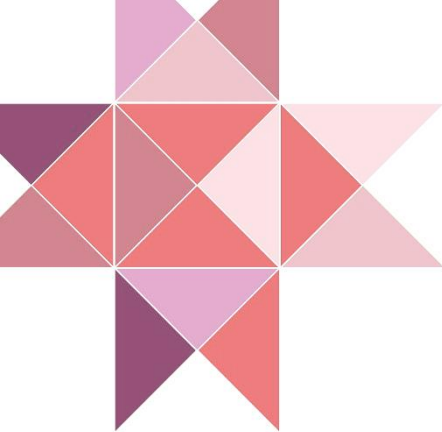
Revizor (XML editor)

- The **Python back-end** of the software serves up the data to anybody authorised to make edits. It is also responsible for exporting the end result, which might be the corrected ALTO XML, plain text versions or word lists built from selected works. The exported product might be further processed by linguistic tools or imported into “corpus” sites specifically meant for facilitating searching and dissemination.
- **The front-end** of the editor is the part where manual changes are made by real human beings, as opposed to the automatic bulk processing in the back-end. By means of a two-pane window, the user can check the original work and make corrections to the text, as well as mark the language or relevance of words – this will aid the back-end in building accurate word lists per language.

Revizor (XML editor)



Revizor (XML editor)



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Tag

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/ 86

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KAŠTANKA

1. Hubin ictāz vedab

Riz nor' koir,—pomes' taksad¹⁾ verei koiranke,—kudam kārzał jalos koskui reboihe, joksenzi polhe i toizhe trotuaradme i holisp kačihe laploidme. Harvašti hān siizutelihe i ulaidusenke lendli se yhten, se toizen kylmnyden lapan i ladi kuti sanuda: „Kut neč tegihe, miše hān segi?

Hān comas mušti, kut hān pravadi peivān i kut jāl'gmāi putui nečiie tuhmatomale trotuarale.

Pei zavodihe sidpei, miše hānen izand, master' Luka Aleksandrovic, pani šapkan, oti kaimioho mitcense puizen šukan, kāroutet rusktaha paikka, i heikahti:

— Kaštanka, astu.

Konz kulišti iceze nimen, pomes' taksad verei-koiranke lāksi vōrstakon alpei, kus hān struzkil magari, magedašti kiskostihe i tōndui izandale jāl'ghe. Lukan Aleksandrovican radon and'jad eliba diki edahan, muga miše kudei sadas kaikutcenno hiiš master' ij yhted kerdad cokoihe traktiraha kovidumha. Kaštanka mušti, miše tel hān vedi ictāz jalos ij luukas. Ihastusiš, miše hāndast otiba guļāimaha, hān hyppi, hurgi nutandanke heboroudten vagonoile, cokoihe kodiden vereihe i hurgui koirile jāl'ghe. Master' migi aigad kadoteli hāndast silmišpei, siizutelihe i karedas hānen pāle kidasti. Daze kerdan tabazi kulakoho hānen reboin korvan, pudišti kerdan toizen i harvašti sanui:

— Mišena... sinā... zdoh... ni... zid, holera!

Konz radon andjad oiiba proittyt, Luka Aleksandrovic cokaizihe vākāizeks sizarehe, kudames jolouzi i zakusi; sizarespei tōndui hān tutpan pereplōtcikanno, sidpei traktiraha, traktiraspei komanno i m.t.

Muga miše konz Kaštanka putui tunmatomale trotuarale, tegeskan'zihe jo eht.

Kaštanka zavodi nyhāida trotuaran, miše lyuta izand hānen jāl'giden dūbudme, no edehko mittase negodāi oli astui uzis rizinoviliis

A. P. Cehov

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A a Ā ā Ā ā B b C c Ç ç D d Æ æ E e F f G g Y y I i J j K

k L l M m N n O o Ō ō P p R r S s Š š T t U u V v X x Z z Ž ž z b b rx

Veps



Crowdsourcing the Finno-Ugrian material

- We have estimated that the Fenno-Ugrica collection will contain around 200 000 pages of editable text.
- The researchers cannot spend so much time with the material that they could retrieve a satisfactory amount of edited words, so the aid of a helping hand is truly needed.

Could crowdsourcing be used here to gain results?

- (Besides, the Kone Foundation required this from us)

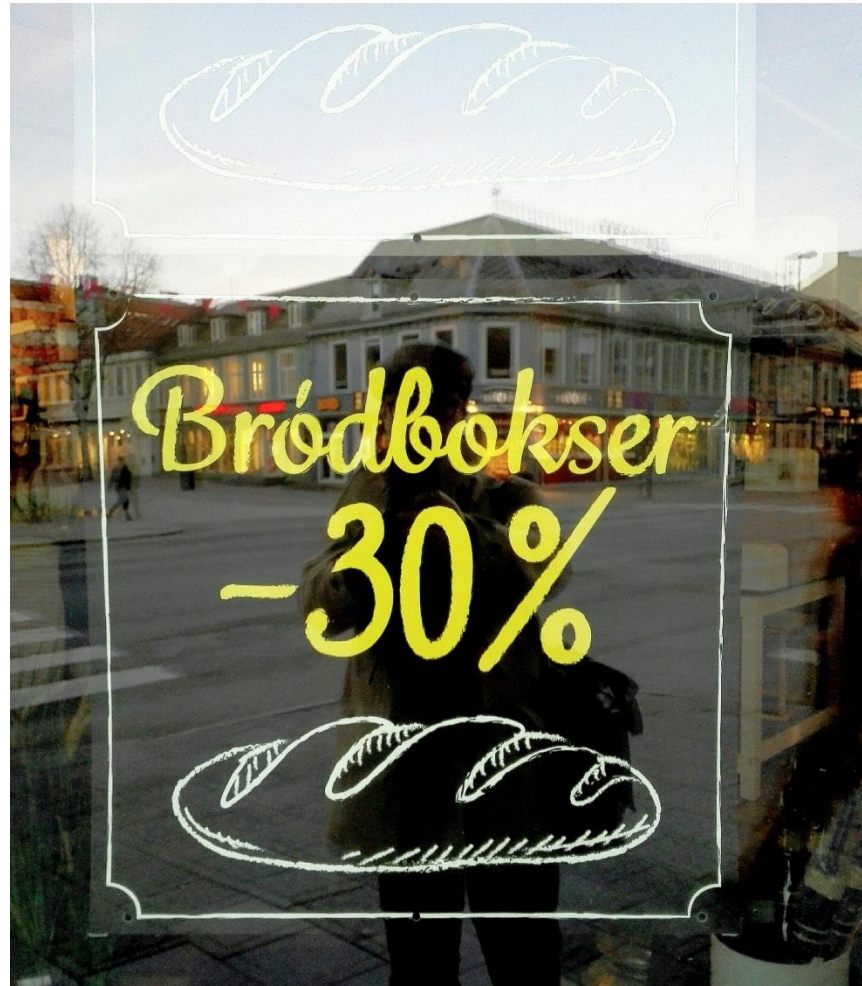


"Traditional" Crowdsourcing

- The targets have often been split into several **microtasks** that do not require any special skills from the anonymous people.
- This approach of crowdsourcing may produce **quantitative results**, but from the research's point of view, there is a danger that the tasks are too hard to handle by the faceless crowd and the needs of linguistic research are not necessarily met.
- The remarkable downside is **the lack of shared goal or social affinity**. There is no reward in traditional methods of crowdsourcing.

Visualisation of the Problem

Trondheim,
Norway
April 19th, 2015



Visualisation of the Problem

- Nynorsk or Bokmål? Old orthography?
- What is the **correct** transliteration? With acute or with stroke, or...
- It should be **brødbokser**
- What has been the primary intention here?





Nichesourcing and Language Communities

- **Nichesourcing** is a specific type of crowdsourcing where tasks are distributed amongst a small crowd of citizen scientists (communities).
- Although communities provide smaller pools to draw resources, their specific richness **in skill is suited for the complex tasks with high-quality product expectations** found in nichesourcing.
- These communities can correspond to research more precisely. Instead of repetitive and rather trivial tasks, we are trying to utilize the knowledge and skills of citizen scientists **to provide qualitative results**.



Nichesourcing and Language Communities

- Some selection must be made, since we are not aiming to correct all 200,000 pages which we have digitized, but give the niches such assignments which **would precisely fill the gaps** in linguistic research.
- A typical task would be editing and collecting the words/pages in such fields of vocabularies, where the researchers do require more information
- E.g. There's a lack of Hill Mari words in anatomy. We have digitized the books in medicine and we could try to track the vocabulary of human organs by editing and collecting **the related words** with the text editor.

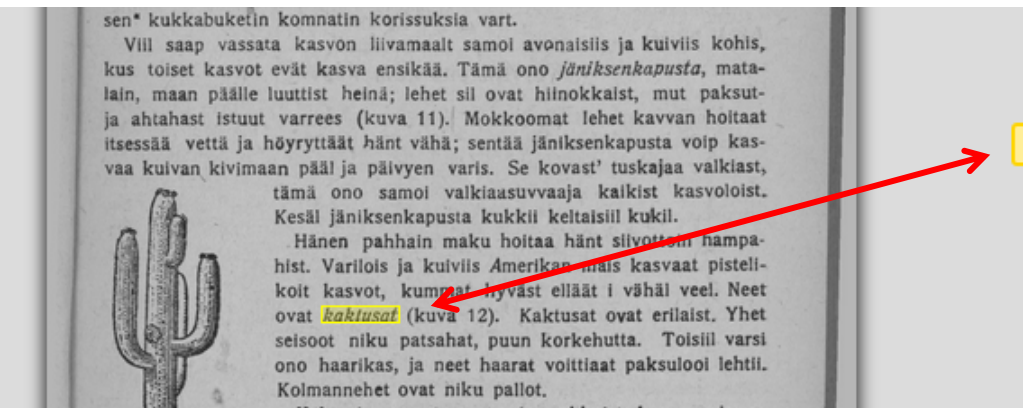


Nichesourcing and Language Communities

- Ingrian (Izhoran), an endangered language, spoken west of Saint Petersburg, around **300 native-speakers** left.
- No education available in native language, only voluntary lessons on Sundays every fortnight
- The focus group is no longer the old people, but **educated** and **assimilated** Ingrians. They have enough **sparetime** and **opportunities** to execute the proof-reading and provide additional information.

Nichesourcing and Language Communities

- Skilled and educated people can do a lot!
- The corrected and translated words in Ingrian will be added onto the multilingual online dictionary, which is openly available for the public.



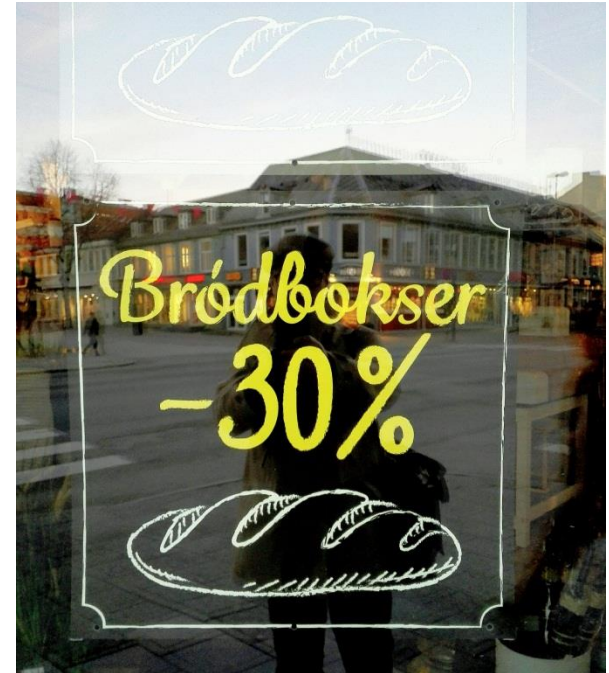
kuivan kivimaan pääl ja päivyen varis. Se kovast' tuskajaa valkiast,
tämä ono samoi valkiaasuvvaaja kaikist kasvoloist.
Kesäl jäniksenkapusta kukkii keltaisil kukil.
Hänen pahhain maku hoitaa hänt siivottoin hampahist.
Hänen pahhain maku hoitaa hänt siivottoin hampahist.
Varilois ja kuivils Amerikan mais kasvaat pistelikoit
kasvot, kummat hyväst elläät i vähäl veel. Neet
ovat **kaktusat** (kuva 12). Kaktusat ovat erilaist. Yhet
seisoot niku patsahat, puun korkehutta. Toisiil varsi
ono haarikas, ja neet haarat voittiaat paksulooi lehtii.
Kolmannehet ovat niku pallot.
Kaktusin varret ovat ain rohhoist kuvvaa, ja se
toittaa kasvoa niku lehet.
Kaktusat omis varsiis hoitaat vettä, höyryää vesi
vaa varren pinnast, mut se pinta ono piinemp, ku
toisiin lehtikasvoloin rohhoiin pinta. Sil viisii kaktusin
varsi tekköön lehtilöin tvvtä. senen lehet ovat muuttisseept

Crowdsourcing vs Nichesourcing

- Traditional approach gives you only
bród
- Whereas nichesourcing gives you
brød

...or potentially more:

brød / bröd / bread / bröt / leipä / chleb etc.





Nichesourcing and Language Communities

- When the language communities involve, it is essential that the **altruism** plays a central role.
- Upon the nichesourcing, our goal is to reach a certain level of **interplay**, where the language communities would benefit on the results.
- This objective of interplay can be understood as an aspiration to support the **endangered languages** and the maintenance of **lingual diversity**, but also as a servant of “two masters”, the research and the society.



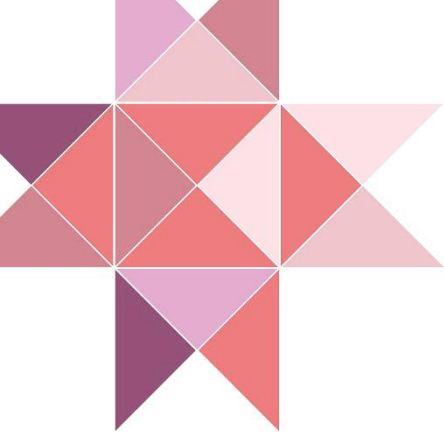
Nichesourcing and Language Communities

- How to locate suitable people to crowdsourcing / nichesourcing?
- Not easy to find the niches with purposeful capabilities for all languages
- Co-operation with universities and libraries didn't really work out
- Activity in English-oriented social media did not help us
 - No remarkable networking, contact or results via [WWW](#), [Twitter](#), [Facebook](#) or [Project Blog](#)
 - No interactivity with native-speakers



Nichesourcing and Language Communities

- When thinking of the possible **niches / crowds**, one must bear in mind that the most of the people are located in Russia.
- Communication and marketing
 - Schedule for blog posts and Vkontakte messages
- Accessible user interface for Russian-speaking audience
 - [Fenno-Ugrica](#), [Uralica](#)
- Activity in social media in Russian is necessary
 - [Vkontakte](#)
 - Chat forums (for linguists etc)
 - IRC channels



Jussi-Pekka Hakkarainen

Сегодня празднуется День эрзянского языка! Эрзя является одним из мордовских языков и на нем говорят на данный момент около 500 000 человек. Портал Национальной библиотеки Финляндии Fenno-Ugrica содержит около 4000 единиц книг и журналов на эрзянском языке, выпущенных с конца XIX до середины XX веков, являясь, таким образом, крупнейшим электронным ресурсом и коллекцией материалов на эрзянском языке. Подробности и ссылки на коллекцию в нашем блоге: <http://blogs.helsinki.fi/fennougrica/2015/04/16/erzya..>

#финноугры #эрзя #мордва #язык #литература



Erzya Language Day, April 16th | Fenno-Ugrica

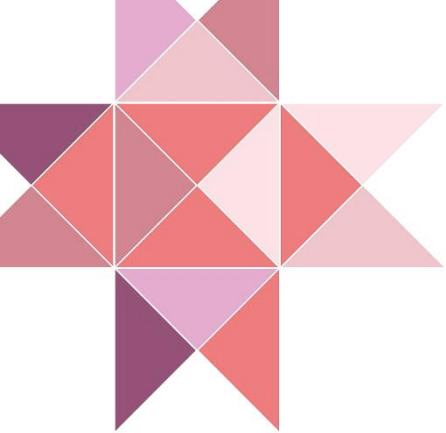
16 Apr at 9:14 am | Comment

12 Like 35

The Vkontakte Effect

Monthly download statistics

| 6 / 2013 | 7 / 2013 | 8 / 2013 | 9 / 2013 | 10 / 2013 | 11 / 2013 | 12 / 2013 | 1 / 2014 | 2 / 2014 | 3 / 2014 | 4 / 2014 | 5 / 2014 | 6 / 2014 | 7 / 2014 | 8 / 2014 | 9 / 2014 | 10 / 2014 | 11 / 2014 | 12 / 2014 | 1 / 2015 | 2 / 2015 | 3 / 2015 | 4 / 2015 | 5 / 2015 | 6 / 2015 |
|----------|----------|----------|----------|-----------|-----------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|----------|----------|----------|----------|----------|----------|
| 1437 | 585 | 867 | 301 | 983 | 794 | 748 | 587 | 489 | 653 | 381 | 2813 | 17718 | 8193 | 8271 | 19906 | 18996 | 9431 | 8159 | 7340 | 10730 | 6716 | 14522 | 47316 | 7454 |



Datasets and Further Use

- We will create the corpora ourselves and release the data for other operators in **Fenno-Ugrica** as wordlists.
- No resources or in-house knowledge for the linguistic work.
- Raw material for online dictionaries.
- Material will be available also in **Korp**, which is the concordance search tool of the Finnish (Swedish) Language Bank.



Datasets and Further Use

Netidigisõnad

[Home](#)

[Click-in-text](#)

[About](#)

Dictionaries

+ VAÐÐA CEELI

+ VÖRU KEEL

IŽORAN KEEL

Izhorian → Finnish

Finnish → Izhorian

+ LĪVŌ KĒL

[Other dictionaries](#)

Izhorian → Finnish (⇌ [Swap](#))

repoi (s.)

o [kettu](#)

Datasets and Further Use



Fenno-Ugrica: Vepsä (näyte) valittu — 29,74K / 2,01M sanetta

ictāz

Yksinkertainen Laajennettu Edistynyt Vertailu

ictāz

Etsi

myös ☐ alkuosa ☐ loppuosa ja ☐ samaista pien- ja suuraakkoset

Konkordanssi: osumia sivulla: 25 järjestä korpuksen sisällä: järjestämätön Tilastoja: laske tilastot tämän perusteella: sana

Konkordanssi Tilastoja

Tuloksia: 12

Näytä konteksti

FENNO-UGRICA: VEPSÄ (NÄYTE)

Hubin (ictāz) vedab Riž nor' koir, — pomes' taksad 1) verei koiranke, — kudam kārzal jalos koskui reboihe, joksen
Kaštanka mušti, miše tel hän vedi ictāz jalos ij luukas.
Tunmatoi yhtnāgoi fati ictāz pās, ani kuti toropihe' i kidastaškanzi: — Karaul!
Kut pidi ictāz mamš konz o ii krest' janan ,k dvorānkan i, jāl'gmal, yarican?
Krilov. ZIRKOL I OBEZJAN (Basnā) Martiška ictāz zirklos homaic i jougal hilläšti hän kondjad tuukaiz: — "Kaçke, — pagizeb, — kom sinä minun!
Da jo i Žilin kerazi jāl'gmäizen vägen fati kädehe kolodkan, jokseb kazakqidenno, a ice ictāz ij mušta, kidastab: — Velled!
Ymbärziba händast kazakad, kyzeltas: ken hän, mitte mez', kuspei? A Žilin ice ictāz ij musta, voikab i johtuteleb: "Velled, velled !" Tuliba soudatad, ymbärziba Žilinan, — ken hänele liibi:
Kut plenas pidi ictāz Žilin? i kut pidi ictāz Kostilin? 3.
Kut plenas pidi ictāz Žilin? i kut pidi ictāz Kostilin? 3.
Iški ictāz viicel hurha kädehe ylembahko kynambrust, hurahti cak, jokseškanz' hulal ojaizel, ligoti hän hänes i
Kut ozuti (mitceks) ictāz Lön'ka nicukaizenke pagištes?
Kut ictāz muiba lapsed udes sijas?

Korpus

Fenno-Ugrica: Vepsä (näyte)

Kuvailutiedot

Tekstin ominaisuuDET

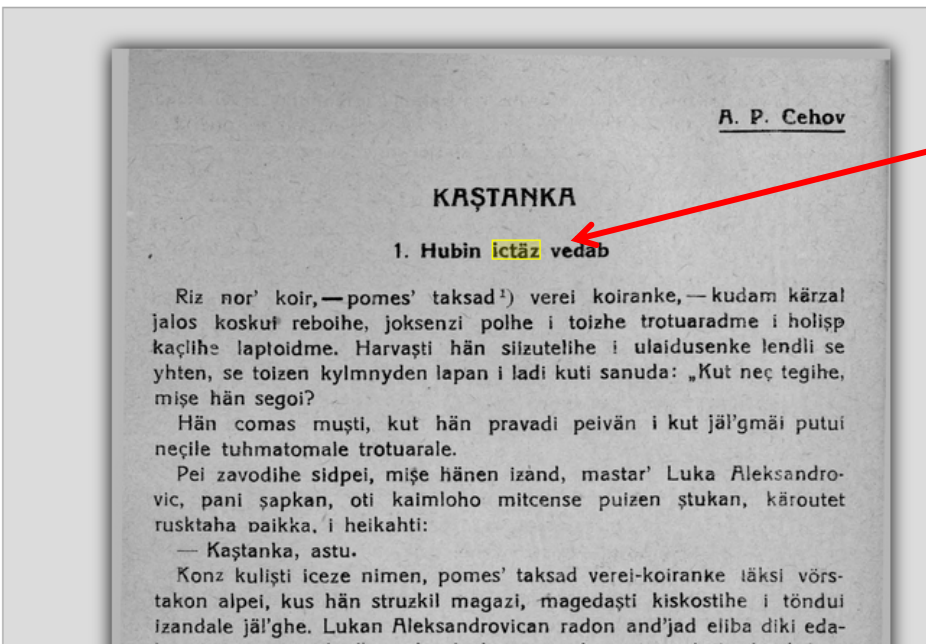
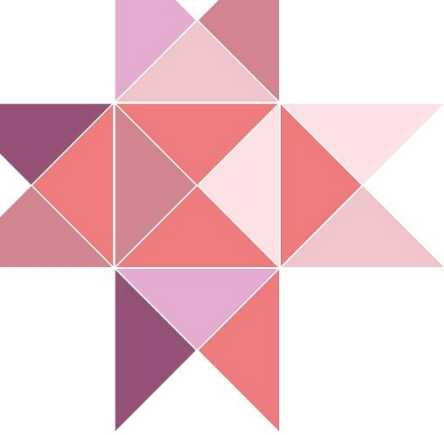
otsikko: Literaturnij hrestomatij, vepskijale nacal'nijale školale kuumanz' openduz'voz' gosudarstvennij kirjailija: F. A. Andrejev päiväys: 19340101 sivunumero: 6 vuosi: 1934

Sanan ominaisuuDET

linkki kuvaan:
<http://ocrui-kk.lib.helsinki.fi/...3b367c79/6>

Lataa tiedostona muodossa: Annot Ref NooJ

Datasets and Further Use



A. P. Cehov

KAŠTANKA

1. Hubin ictāz vedab

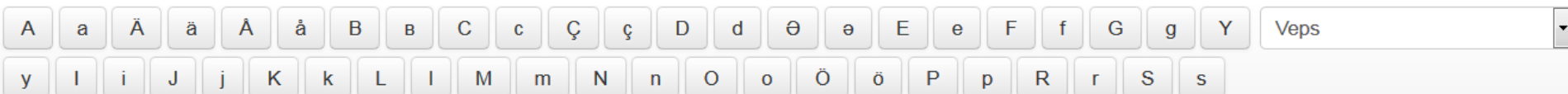
Riz nor' koir, — pomes' taksad verei koiranke, — kudam kārzal jalos koskui reboihe, joksenzi polhe i toizhe trotuaradme i holisp kaçlihe laploidme. Harvaşti hān siizutelihe i ulaidusenke lendli se yhten, se toizen kylmnyden lapan i ladi kuti sanuda: „Kut neç tegihe, miše hān segi?

Hān comas muşti, kut hān pravadi peivān i kut jāl'gmāi putui neçile tuhmatomale trotuarale.

Pei zavodihe sidpei, miše hānen izand, mastar' Luka Aleksandrovic, pani šapkan, oti kaimioho mitcense puizen ştukan, kāroutet rusktaha paikka, i heikahti:

— Kaštanka, astu.

Konz kulişti iceze nimen, pomes' taksad verei-koiranke läksi vörstakon alpei, kus hān struzkil magazi, magedaşti kiskostihe i tõndui izandale jāl'ghe. Lukan Aleksandrovican radon and'jad eliba diki edahan, muga miše kudei sadas kaikutcenno hiiş mastar' ij yhted kerdad cokoihe traktiraha kovidumha. Kaštanka muşti, miše tel hān vedi ictāz jalos ij luukas. Ihastusiş, miše hāndast otiba guiāimaha, hān hyppi, hurgi nutandanke heboroudten vagonoile, cokoihe kodiden vereihe i hurgui koirile jāl'ghe. Mastar' migi aigad kadoteli hāndast silmişpei, siizutelihe i karedas hānen päle kidasti. Daze kerdan tabazi kulakoho hānen reboin korvan, pudişti kerdan toizen i harvaşti sanui:





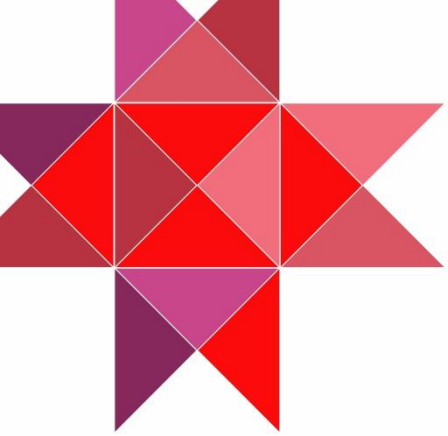
Some Conclusions

- The **Fenno-Ugrica collection** and its materials are only one part of the work, albeit important due to their rare use in research.
- National Library of Finland has went beyond the traditional framework of libraries in post-production, crowdsourcing and data releases.
- The machine-encoded texts do contain errors that need to be removed in order to match them with the researchers' needs.



Some Conclusions

- The correction of the words will be done with **the help of OCR editor** and the tasks are distributed to **the crowd**.
- Instead of releasing tasks to the faceless crowd, we interplay with the **language communities** for the research's and society's mutual benefit.
- These communities can correspond to research more precisely. Instead of repetitive and rather trivial tasks, we are trying to utilize the knowledge and skills of citizen scientists to provide **qualitative results**.



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