# Starting up Smoothly

## Experiment evaluation

**Author:** Suse Miessner

**Date:** 27.08.2019

**Contributors:** Vesa Hagström, Laura Halonen, Mari Humalajoki, Olli Ilmarinen,

Milja Kiviranta, Tuija Pajukka, Katja Rintala, Mariana Salgado & Miika Wires

A collaboration between:

Maahanmuuttovirasto
Migrationsverket
Finnish Immigration Service

VERO SKATT

PRH FINNISH PATENT AND REGISTRATION OFFICE

Coordinated by:

in land design

# Table of contents

# Executive summary

In 2018 a common chatbot service of three independent interconnected chatbots started its pilot: The user interacts with only one interface to ask questions to all three chatbots and receives answers related to starting a company, taxation and immigration in Finland. The project covers topics from the three participating organisations Finnish Immigration Service (Migri), Finnish Tax Administration (Vero), and Finnish Patent and Registration Office (PRH).

Starting up Smoothly took place in two distinct phases: First it was an experiment aiming at a proof of concept of a common networked chatbot service. In the second phase the goal was to pilot the chatbot service in real-life conditions. A team of experts from all three organisations worked together intensely to prepare the pilot: from designing the individual chatbots and their content to defining transfers between the chatbots and testing the service.

From November 2018 to June 2019 users have had over 53.000 conversations with the three chatbots, which averages to 240 conversations daily. In this time users have transferred between the bots more than 3100 times.

Through qualitative and quantitative feedback, the Starting up Smoothly experiment has proven the big potential of the concept of independent interconnected chatbots: Users have emphasised that this concept can meet their expectations of public services when scaled up. They were delighted to see information from three public agencies within the same channel and called the service a state-of-the-art service delivery model. Starting up Smoothly has received national as well as international interest, by making our work public and transparent through presentations and blogposts, which are also part of this evaluation document.

During this experiment we learned about cross organisational collaboration: The team worked with a customer-centred mindset towards a common goal, tried out new ways and very importantly worked together regularly. We believe that this together with a clear leadership were the main success factors for Starting up Smoothly.

Lastly, in this document we also share the four phases in which a new organisation, PRH, has been onboarded to the existing experiment. We believe the documentation of this process can also serve as a basis for future chatbot development and and making Aurora.AI alive.

All in all, the Starting up Smoothly experiment has shown that government agencies can be fast: It took only nine months to develop an entirely new digital service from scratch to a public pilot.

## Purpose of the document

This document aims to **summarise, document and evaluate the Starting up Smoothly experiment**.

The document consists of a number of *blog posts*, which have been written by different team members during the time of the experiment and is extended by a *few sections* that add understanding of areas that have not been covered in previous blog posts.

The document is for everyone, who are interested in learning about the Starting up Smoothly experiment, but it is not an academic research. Rather, we shed some light on the practice of Starting up Smoothly, well aware that we leave out other interesting areas.

# About the experiment

Starting up Smoothly is a collaboration between Finnish Immigration Service (Migri), Finnish Tax Administration (Vero), and Finnish Patent and Registration Office (PRH) to **pilot a common chatbot service**, which answers questions related to starting a company, taxation and immigration to Finland.

The common chatbot service is a network of three independent chatbots that are connected in a networked way. The user interacts using only one interface to ask questions to all three chatbots. The AI decides which chatbot should answer the question best, depending on the topic of the question.
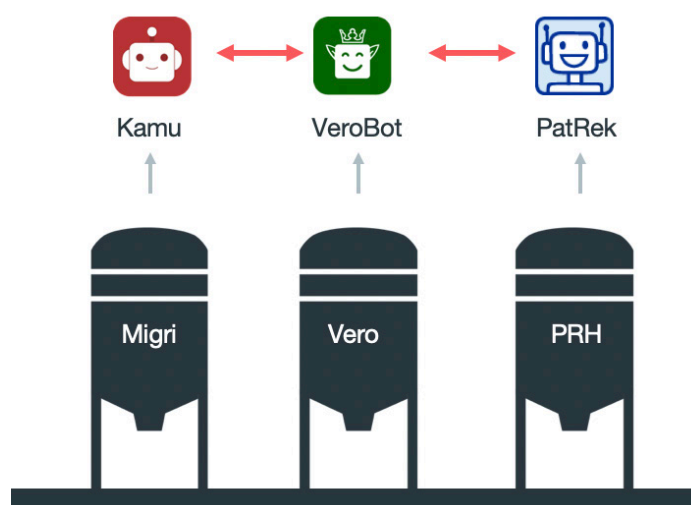
*Chatbot network concept: Three siloed organisations have their individual chatbots which are interconnected only technically, so that each chatbot can transfer to all others.*

The Starting up Smoothly experiment started in March 2018 and this evaluation covers the project until June 2019. At the point of writing the three chatbots are still online and currently planned to remain available till December 2019.

The experiment was initiated as a joint project of Migri and Vero, with PRH joining after the first phase. Migri's in-house design team Inland Design governed the project and Migri provided the technology to all three organisations involved.

# Research questions

In March 2018 we set up the following research questions for the experiment:

**A - Can we serve customers through a common channel?**

**B - Should the customers be aware of organisational silos?**

**C - How can we collaborate across organisational silos, budgets and resources?**

**D - How to take another organisation on board in a chatbot network?**

These research questions guided the experiment loosely, while the main focus remained on building a chatbot network service in practice.
Looking back, we would change the wording of some of these research questions slightly in order to get more informative answers. As said before, this document is not to be confused with academic research: Starting up Smoothly is a practical experiment and research questions, once set together with the team, have not been changed later on. We will consider this in _Evaluating the experiment_ later in this document.
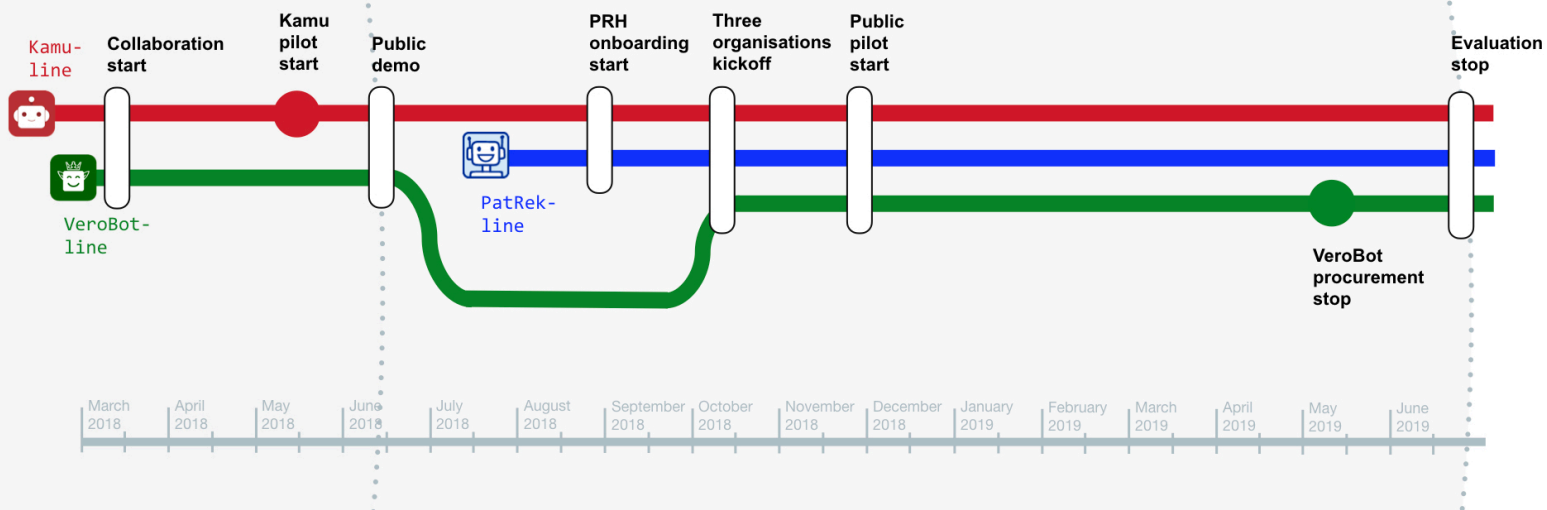
*Project timeline with most important milestones*

Timeline showing Phase 1 and Phase 2 with milestones:

- Kamu-line
- Collaboration start
- Kamu pilot start
- Public demo
- PRH onboarding start
- Three organisations kickoff
- Public pilot start
- Evaluation stop
- VeroBot-line
- PatRek-line
- VeroBot procurement stop

Timeline months: March 2018, April 2018, May 2018, June 2018, July 2018, August 2018, September 2018, October 2018, November 2018, December 2018, January 2019, February 2019, March 2019, April 2019, May 2019, June 2019

# Timeline & phases

The Starting up Smoothly experiment took place in two distinct phases, which also guide the structure of this document:

In the **first phase** Vero and Migri created a demo of the chatbot network which was demoed to public servants in June 2018.

In the **second phase** PRH joined the collaboration and the new goal was to pilot the common service of three organisations with real users.

# Basic technological approach

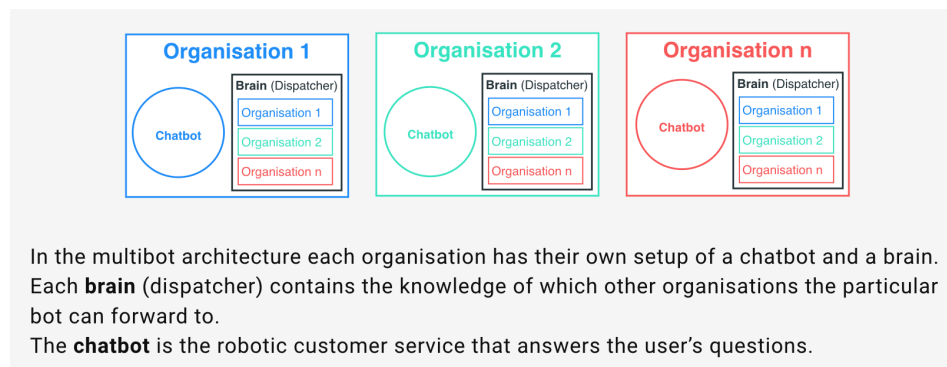The purpose of this section is not to give an extensive overview about the technology used and built to make the chatbot network that enables the Starting up Smoothly experiment. The purpose is rather to give a very basic understanding of the uniqueness in this approach of connecting chatbots.

The idea of the chatbot network was born out of an existing need: Users of public services do not always know the responsibility areas of the different organisations. They expect to get answers from one place to all their questions when a life situation changes. On the other side are public organisations with their responsibility areas, traditions and monetary constraints. For them to truly co-create a service that serves users in a particular life event is quite a big effort: All organisations have to agree what service to create, get resources simultaneously and need to divide responsibilities also for after the service is in use. To avoid such hassle, but to enable delivering a service as the users expect, the chatbot network concept was born: The idea is that each organisation remains in charge only of their own content. In theory, they can develop it independently. In practice, some collaboration between the organisations is needed to agree which life event to cover, which services belong to that event and to identify opportunities for transfers.

The idea of the chatbot network includes that each organisation will take care of their own costs, no common procurement is needed once the brain behind the network is in place. The architecture behind Starting up Smoothly enables exactly this: Each organisation has their own instance of a boost.ai-environment, which they are in charge of. Each of the AI models is trained independently and the three instances are only connected through an intelligent dispatcher *(read: brain)*, which decides if a question is for one organisation or the other.



In the multibot architecture each organisation has their own setup of a chatbot and a brain. Each **brain** (dispatcher) contains the knowledge of which other organisations the particular bot can forward to.
The **chatbot** is the robotic customer service that answers the user's questions.

*Basic architectural overview*

When a user inputs a question into their device chatting, for example, with Kamu, the device sends the question to Kamu's dispatcher *(brain)*. The dispatcher knows all other chatbots that Kamu could forward the user to and forwards the question it received to all of them. In return, it receives a score indicating how likely this chatbot has an answer to the question. In case VeroBot is more likely to have a better answer, the user receives the suggestion to be transferred to VeroBot and after she agrees the answer is sent directly to the chatbot of Vero (skipping the dispatcher), who then sends an answer back to the user's device. There the answer is displayed, and the user can react to it.

## Information flow to deliver an answer in the multibot network
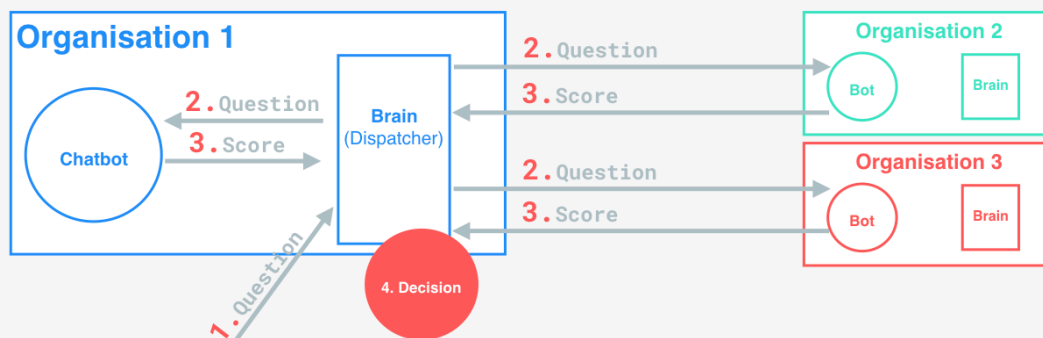


1. User inputs their question into their device. Device sends the question to the currently active brain.
2. Brain forwards the question to all connected chatbots.
3. Each bot replies with a score indicating how likely they have a good answer to the question.
4. Active brain decides based on the score which chatbot should answer the question.



5. Active brain suggests a transfer to another organisation to the user.
6. User accepts the transfer suggestion.
7. The initial question is forwarded again to the transferred organisation's chatbot.
8. The user receives the answer to their question.

## Phase 1: Chatbot network demo

**When?**      March to June 2018
**Who?**      Migri & Vero

### Goals

During the kick-off session between Vero and Migri teams in March 2018 we agreed on the following goals for the project in this phase:

*We will experiment a common service for a customer service chatbot.*

*The partners in this experiment are Migri and Vero.*

*For the technical part of this experiment, we use Migri's existing chatbot software solution.*

*The experiment has a limited scope of content.*

*A live pilot will be decided later.*

### Team

While in the later phase of the project some team members spent 100% of their time on the project, in this phase Starting up Smoothly was one work task among others for all of us. While the amount of people involved already looks big in retrospect, it became much bigger and work more intense in the second project phase.

### Team overview

**Cross-organisational roles**
**Product owner:** Vesa Hagström
**Project managers, Lead designers & Content leads:** Suse Miessner, Janne Mattila
**AI training:** Christian Sommer
**Front-end implementation:** Pavels Volcoks, Tyko Niemi
**Network implementation:** Boost AI & Tyko Niemi

**Team Kamu**
**Content design:** Mari Humalajoki, Laura Halonen
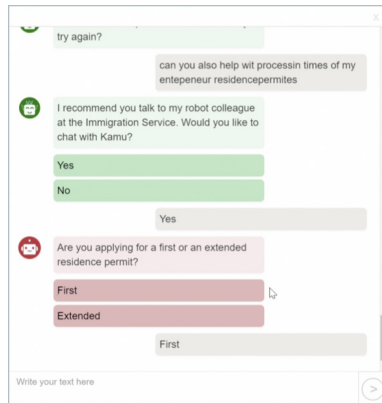**Substance experts:** according to needs

**Team VeroBot**
**Content design:** Miika Wires, Janne Mattila, Henri Harvima, Heini Törmälä
**Substance experts:** advisors in Startup team

## Blog: Starting up Smoothly — Connecting government agency information through chatbots



*In the chatbot network, in the same channel users receive answers from multiple organisations.*

*Author: Suse Miessner*
*Published: Oct 31, 2018*
*Edited by Mariana Salgado*
*Permalink: https://medium.com/inland/starting-up-smoothly-connecting-government-agency-information-through-chatbots-84bccbeafdd7*

In public services we realise that customers often call the wrong organisations with their questions. Why does this happen? The distribution of responsibility is often arbitrary and changes over time. But what if customers don't need to know which questions to ask from which government agency? What if there was one place where all information was united? And what if this place was made in a conversational way, where users can ask their specific questions and receive answers from whichever organisation this question belongs to? At Inland, this is what we work on under the project name of "Chatbot network".

### Chatbots to increase customer service quality

Chatbots are one of the hot topics to increase quality in customer service in public organisations in Finland. The idea of a chatbot is to automate customer conversations. This means the customers receive pre-written answers to their questions. When many public organisations simply do not have the staff to answer all client requests in good quality, introducing chatbots is less about replacing people by robots and more about increasing the quality of service.

From the customer point of view chatbots have several benefits:

- They work around the clock, seven days a week.
- They are as slow or fast as the customer is. There's no pressure to understand everything correctly the first time. Users can read the answers several times.
- There is no pressure to answer quickly. Customers do not feel that they are taking the time of other customers, so they can take their time to articulate their questions.
- They allow customers to come back to a conversation after
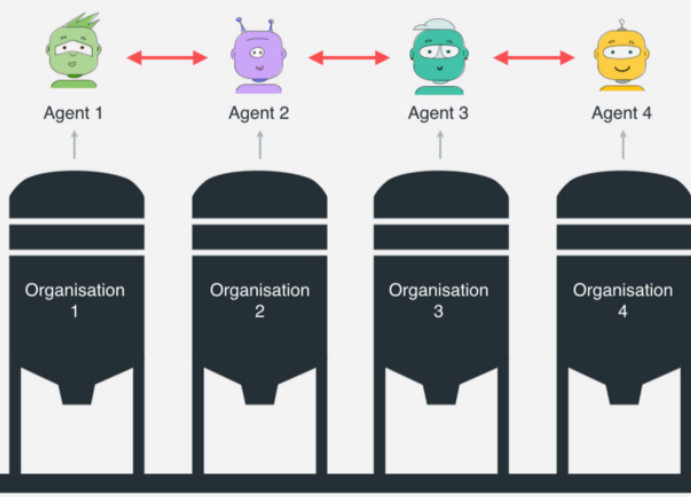
*In the chatbot network each organisation owns an independent chatbot. These bots are connected via a "collective brain", so they can forward customers to the organisation in charge.*



*In the demo event, civil servants could try out the chatbot network for the first time.*

saving it.

- They can be trained to speak more languages than a human customer service person could.
- They are easier to navigate than a webpage, as there is no need to open many windows and search for the right information. Everything happens in the same window.
- They mirror a natural conversation with a person. The user doesn't have to learn anything new to interact with them.

## Chatbot network concept

Since responsibility distribution is often illogical and changing, we at Inland are working on the idea to connect the chatbots that individual organisations in Finland are producing. With this idea we are bridging the gap between user needs and organisation's siloed operations. Since this idea is appealing, in January 2018 the Ministry of Finance has taken over the concept of developing what we call a "national network of chatbots" in Finland under the project name "AuroraAI".

There are two key elements of our chatbot network concept:

**1. We organise the service around user needs, not government silos**

As a basis for deciding on content we look at "events in life". This means we create service-packages around user journeys that happen in specific moment's in a person's life. User needs in life-events always span several organisations, but when the chatbot network is in place the user does not need to know which government agencies are involved beforehand. Migri and its partner organisations are currently concentrating on the life-event "starting a company as a foreigner in Finland".

**2. Each organisation is in charge of their own content anyways**

While we promote services around events in life which extend over government silos, we are also aware that practical operations of the agencies continue to be siloed. To avoid the well-known extensive collaboration projects between different public organisations with loads of planning, but little or late implementation. Our chatbot network concept promotes each organisation's responsibility over

**Yu Chen**
starts power plant in Northern Finland as a susidiary of a Chinese mother company.

**Vera Allik**
moves from Estonia to Helsinki to start her own hairdressing saloon

**Berat Asani**
finishes his Master's degree after 2 years in Finland and starts a food import-export to Turkey.

*These user personas were used for prioritising content.*

their own content area. The way we are technically building the content enables each organisation's chatbot to work independently, but to transfer to all other organisations whenever needed.

## Chatbot network demo and prototype

Since March 2018 Migri has experimented together with the Finnish Tax Administration (Vero) how the practical work behind a network of chatbots can be organised. We demoed a first version of a service for foreign entrepreneurs and workers wanting to come to Finland in June 2018. The main focus of the content was on advising the immigrants on applying for residence permits, as well as how to take care of their personal taxes. In early June we tested the prototype with several users. Some of them already lived in Finland, while others were in China considering starting a business in Finland.

As an outcome of the first phase of the project we demoed the prototype in June 2018 to civil servants from different organisations in Finland. The recording from the event can be found here: https://youtu.be/YObCK8lTTDU?t=3283
(Some of the demo event was in Finnish. This video will start with the actual demo of the prototype).

## Next step: chatbot network pilot

During summer 2018, a new organisation joined our collaboration: We welcomed the Finnish Patent and Registration Office. Now we extend the focus to questions about starting a company in Finland. Currently the project team concentrates on two company types: limited-liability companies or private traders. These are the three user personas we use to decide which content we need (see image above)

From now, it is about one month before we plan to go live with our chatbot-network pilot for the first time. A lot of bureaucratic, team management and technical hurdles have been taken (finding rooms where 3 organisations can work together is still more challenging than

you would expect) and we're looking forward to testing our concept with real users. The pilot itself will last until June 2019.

Inland has had a big role in shaping this project: Our way of developing the chatbot network is implementing pilots with different public agencies, rather than building a huge infrastructure and hoping that everybody would join. In every phase of the collaboration we learn: How to collaborate with other organisation's teams? Which content should we develop next based on customer needs?

We believe that this agile and collaborative way of working is the right path towards a smooth integration of chatbots in the public service.

So: Hold thumbs for our chatbot network pilot!

### Outcomes

In June 2018 we demoed the network of two chatbots, VeroBot and Kamu, to about 40 civil servants from different organisations in Finland. The recording of the event is available here: http://bit.ly/SuSDemoJune2018

The feedback during the demo event was so great that we decided to continue the experiment with a second phase: Building a public pilot so people can try out the chatbot network by themselves rather than only being able to see it demoed.

# Phase 2: From demo to public pilot

**When?**     June 2018 to June 2019
**Who?**      Migri, Vero & PRH

In this phase PRH joined the collaboration and the project goals changed, since the goals of the first phase were reached, but the research questions could not be answered sufficiently yet.

## Goals

In the kick-off with the project team, we agreed on the following goals for this phase:

> *Live pilot of a network of virtual assistants with 3 organisations involved*
> *-each organisation is in charge of their own content*
> *-pilot takes place at <u>migri.fi</u>, <u>vero.fi</u> and <u>prh.fi</u>*
>
> *Public presentation of Starting up Smoothly*

We also set out to start the live pilot before Slush 2018, an ambitious goal which we finally reached by publishing the pilot on 29.11.2018.
The public presentation took place in early December 2018.

## Team overview

### Cross-organisational roles
**Product manager:** Vesa Hagström
**Product owner:** Suse Miessner
**Lead designers:** Suse Miessner, Janne Mattila
**User testing lead:** Janne Mattila
**Content lead:** Laura Halonen
**AI training lead:** Milka Holmberg, Natalja Salaka
**Visual Design:** Pia Laulainen, Suse Miessner
**Front-end implementation:** Janis Kope, Pavels Volcoks
**Network implementation:** Boost AI

### Management group
**Migri:** Vesa Hagström, Suse Miessner, Arto Airaksinen
**Vero:** Miika Wires, Janne Mattila
**PRH:** Anna Lauttamus-Kauppila, Sari Kuisma-Kari, Olli Ilmarinen

### Team Kamu
**Project management:** Arto Airaksinen, Suse Miessner
**Content lead:** Laura Halonen
**Content design:** Laura Halonen, Katja Rintala
**AI training:** Mari Humalajoki
**Substance experts:** according to needs

### Team VeroBot
**Project management:** Janne Mattila
**Content lead:** Milja Kiviranta
**Content design:** Milja Kiviranta, Henri Harvima, Janne Mattila
**AI training:** Henri Harvimaa
**Substance experts:** according to needs

### Team PatRek:
**Project management:** Olli Ilmarinen
**Content lead:** Tuija Pajukka
**Content design:** Tuija Pajukka, Olli Ilmarinen, Ari Varila
**AI training:** Teemu Väittinen
**Substance expert:** Kirsi Lahtinen

## Working practices

Similar to the first phase not all team members worked full time on this project, but had other tasks going on simultaneously. This is especially true for the PRH team, who could only spend 20-40% of their time in reality. However, we want to point out that on average the team worked more intensely in this second phase than in the first one, especially in the months October and November 2019.

After the start of the pilot the work became less intense and we started to document how we had worked, wrote the different blog posts that are part of this document and also had to monitor and maintain the existing content. This is what we will describe in the next subchapter.

## Creating the network

### Blog: From demo to public pilot—Documenting Starting up Smoothly working practices
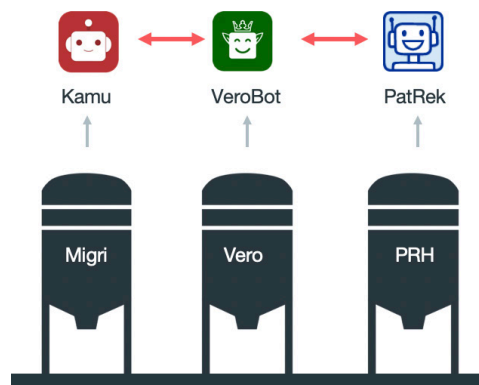


*Concept of the chatbot network: independent chatbots of three organisations are interconnected through an intelligent technical layer*

*Author: Suse Miessner*
*Published: May 16, 2019*
*Edited: Mariana Salgado*
*Permalink: https://medium.com/inland/from-demo-to-public-pilot-eec0d512bc58*

Starting up Smoothly is the name of the collaboration between the Finnish Immigration Service (Migri), the Finnish Tax Administration (Vero) and the Finnish Patent and Registration Office (PRH). The goal of this collaboration was to pilot a chatbot network, where three independent chatbots are interconnected through an intelligent layer.

Inland has had a vital role in shaping how this project is run, since we
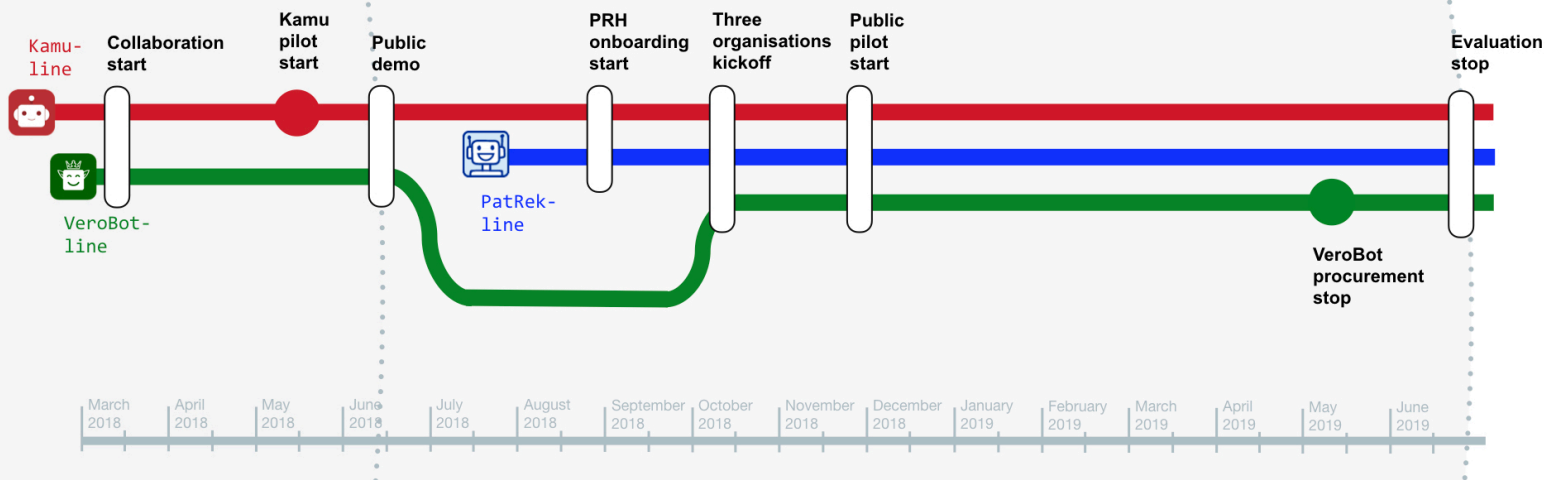
*Project timeline March 2018 to June 2019*

are the coordinators between the three organisations. The project started as a collaboration between Vero and Migri in late March 2018. You can read more about the first phase of the project in this blog post: Starting up Smoothly — Connecting government agency information through chatbots

In this blogpost I want to document the second phase of the Starting up smoothly, which spanned from June 2018—after the public demo—to December 2018—when we started the public pilot.

## Steps to develop Starting up Smoothly in this (2nd) project phase

In summer 2018, PRH joined the project to create their chatbot as part of the network. In order to structure this blog a bit better I group our actions and working practices into five steps:

**Step I:** Onboarding the third organisation

**Step II:** Developing three individual chatbots simultaneously

**Step III:** Defining transfers between the chatbots

**Step IV:** Gathering user feedback and iterating content

**Step V:** Piloting the chatbot network

Each step can be understood as a period of time, but also as a number of actions and working practices, which were used to reach a certain sub goal. Let's go through each of the steps one by one:

## Step I: Onboarding the third organisation

**When?**

From June 2018 to October 2018

**Why?**

The goal was to bring the team from Patent- and Registration Office up to speed in developing their chatbot PatRek.

**How and what?**

Actually, I will write another blog post documenting how we onboarded the third organisation to Starting up Smoothly. I already

have the draft for this post, but it would make this blog post even longer than it already is, and it's a slightly different topic, so please be a little bit patient with me.

## Step II: Developing three individual chatbots simultaneously

**When?**

This is a bit fuzzy, but I will just say it was during September—October 2018.

**Why?**

We wanted each individual chatbot to have enough content to bring value to the users independently, before we connected them to the network.

**How and what?**

In the beginning of this phase we discussed the **target audience** for Starting up Smoothly again: The service is for foreign entrepreneurs who are still in their home country but want to start a business in Finland. Based on additional user research, done during the onboarding of PRH, we defined these three user personas:



**Yu Chen**
starts power plant in Northern Finland as a susidiary of a Chinese mother company.

**Vera Allik**
moves from Estonia to Helsinki to start her own hairdressing saloon

**Berat Asani**
finishes his Master's degree after 2 years in Finland and starts a food import-export to Turkey.

The aim with the user personas was to create fictional representations of the service's real end users, which had potential touch points with all three organisations.

Each organisation then individually **defined the content they wanted to create** before going live. We synchronised these plans between all organisations, so that the content of the three organisations makes a useful unity for the users.

Next, each organisation started to build their own content. You can say that we worked on this in parallel and independently from each other. Nevertheless, from this point onwards we worked every Tuesday in the same room. This gave us the chance to see the progress of the other organisations, but also to synch our content early on.

After structuring the content on high-level each of us went into more detail for the content areas that were in scope. We built **conversation flows**: How does the user go through an entire conversation if they have asked a high-level question, that cannot be answered directly? Instead the bot answers giving different selection options.
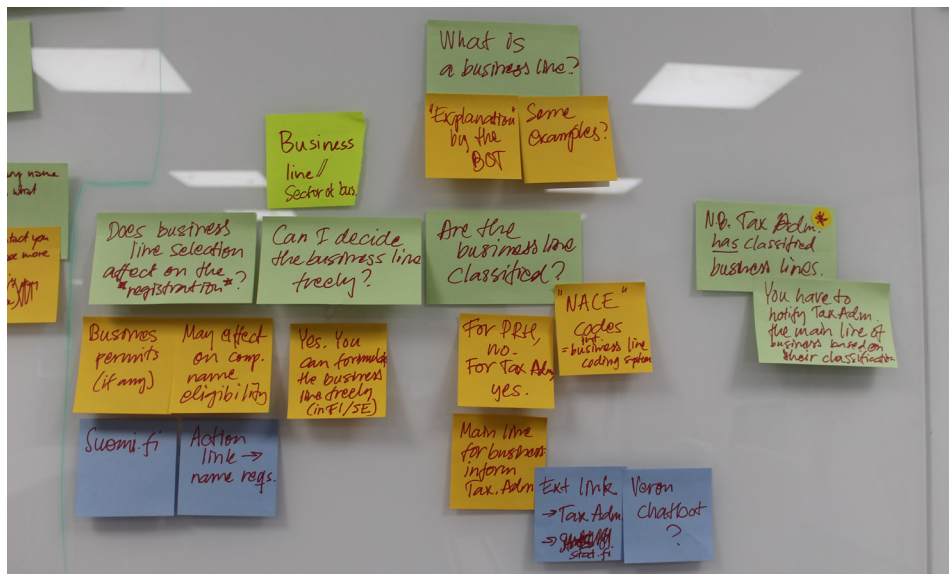
*Example conversation flow design: What is the companies business line and related questions*

Conversation flows help us to see how the user experiences the service, but they also allow us to understand the structure of our intents. You can understand intents as a questions[plural]-answer-pairs. There are many ways to ask a question, that can lead to the same answer. That is what we call an intent. Then each intent is put into a hierarchy of other intents, which is structured from more general questions on the high level to more detailed ones lower down in the hierarchy.

Structuring intents is often done on paper, post-its, whiteboards or by other non-digital means. This helps to focus on understanding the structure and user experience first. We see this particularly important for people, new to building chatbot content. Then we start using the software to **build the required intents, enter the chatbot reply texts, as well as test and training data.** Test and training data are needed for the advanced AI to predict, learn and test, which user questions should lead to which chatbot replies.

It was part of the working process to **constantly test** newly built content among the team of all three organisations. Obvious errors were found rather quickly when another person looked at the content and gave feedback.

## Step III: Defining transfers between the chatbots
### When?
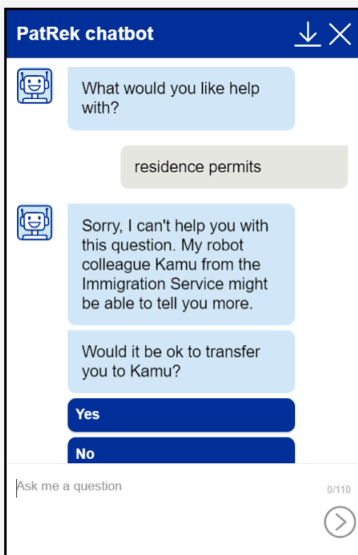This was an ongoing process starting from September 2018 to the start of the pilot in late November 2018.
### Why?
We needed to understand how the chatbots interact with each other. The whole idea of "Starting up Smoothly" was to connect three independent chatbots, so this is where the juice comes into the project.
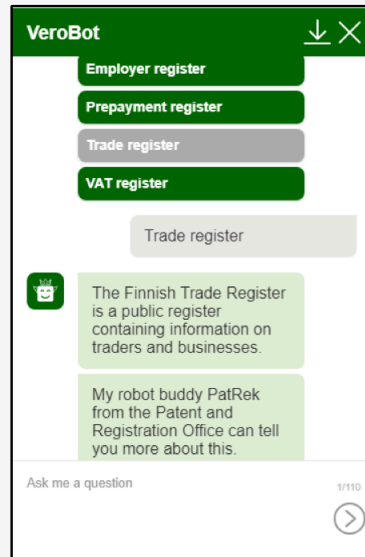### How and what?
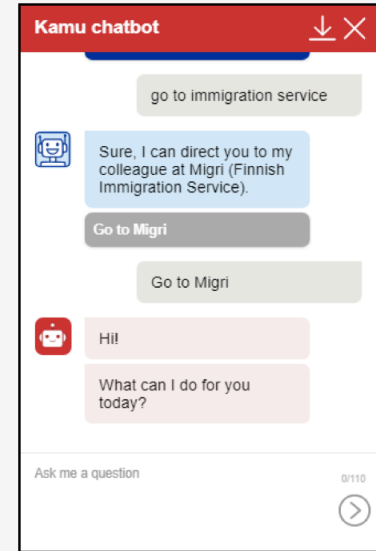Two types of transfers between the organisations felt obvious to us from the beginning:

**Reactive transfer**

**PatRek chatbot**

What would you like help with?

residence permits

Sorry, I can't help you with this question. My robot colleague Kamu from the Immigration Service might be able to tell you more.

Would it be ok to transfer you to Kamu?

**Yes**

**No**

Ask me a question                    0/110

**Proactive transfer**

**VeroBot**

Employer register

Prepayment register

Trade register

VAT register

Trade register

The Finnish Trade Register is a public register containing information on traders and businesses.

My robot buddy PatRek from the Patent and Registration Office can tell you more about this.

Ask me a question                    1/110

**Manual transfer**

**Kamu chatbot**

go to immigration service

Sure, I can direct you to my colleague at Migri (Finnish Immigration Service).

Go to Migri

Go to Migri

Hi!

What can I do for you today?

Ask me a question                    0/110

*Examples of all three transfer types*
*(Note: image is not part of the original blog post and has been added only in this document)*

**Reactive transfers** refer to transfers where users ask about content that a different chatbot knows about

Example: A user starts with questions about starting a private trader from the Patent and Registration Office. She then asks for information about her personal taxation, which is a content area covered by Vero's chatbot. PatRek offers a transfer to Vero based on the user's input.

**Manual transfers** refer to handovers where users explicitly ask to talk to a certain chatbot or organisation.

Example: A user has transferred from Migri to Vero. She later remembers that she has another question about immigration, so she asks, "Can I switch to Migri?".

The third type of transfer was less obvious, but based on our user personas we understood that proactive transfers are where we can really add value to the user experience:

**Proactive transfers** refer to handovers where the users are proactively given more information than they may expect.

Example: A non-EU foreigner asks detailed information about a residence permit to work in Finland. The chatbot then reminds the user that she will probably need a tax card to work in Finland and suggests transferring to the Tax Administration for more information.

Combining three types of transfers between the chatbots supports users to switch smoothly from one bot to the other, from one domain of knowledge to the next—and back. Being able to switch between the three organisations' chatbots in three different ways facilitates effortless flow of the user experience.

From technical point of view, manual transfers where introduced first, followed by reactive transfers. Proactive transfers where the last types of handovers to be implemented. They were based on the user

needs the three organisations identified together.

## Step IV: Gathering user feedback and iterating

**When?**

From September 2018 to December 2018

**Why?**

User feedback before the pilot helped to understand how immigrants perceive and use the three chatbots together. In effect it improves content as well as technical capabilities.

**How and what?**

During the timeframe we ran three rounds of user tests: The first round concentrated only on the PRH chatbot (and could be considered part of onboarding), while the other two rounds tested each organisations' content as well as the transfers between them. Our best practice is to test with real users of our service as soon as possible but wait until there is enough content for the test user to understand the service concept. One main challenge has been to find the right users to test with. This required pre-planning, which we didn't always have in place, and some effort put into user recruiting (because as government organisations you cannot pay a recruitment service).

Based on user testing we **iterated content**: We adjusted wordings to be easier to understand for our end users, we created more content that we had not anticipated but that was important to our users, and we adjusted the algorithms based on which chatbots transferred from one to another.

## Step V: Piloting the chatbot network

**When?**

The pilot is ongoing since 29.11.2018 and we promise to continue it at least until 30.06.2019.

**Why?**

Piloting the chatbot network before putting it into permanent production is one of the essential parts of our user-centred process. We understand user feedback as one of the crucial success factors for our services. Only by piloting with a limited scope we gain feedback from a bigger group of users before investing a bigger amount of resources. We see the usefulness of the service and understand how much resources it takes to maintain the solution. Piloting can be understood as an extended user testing with a wider audience.

**How and what?**

We piloted in two phases:

**Internal pilot** refers to a trial round inside the organisations. Each of the three organisations involved in Starting up Smoothly did the internal pilot in their own way: In Migri and PRH a group of experts tried out the service before going live, while at Vero the whole organisation was able to test the chatbot network for a few days. In our experience the internal pilots helped to get understanding and buy in from the organisations and gave the other colleagues in the organisation a chance to try out the new service before it went live for customers.

**Public pilot** refers to the publicly available service trial. This is what we mostly refer to when we talk about the pilot of Starting up Smoothly. Now that the public pilot is nearing its end, we will evaluate the learnings and gather more best practices. The management group of the project would like to extend the pilot, which is a good indicator that the experiment was successful and that there is value in the service. Plans to continue the pilot until the end of 2019 are currently being made. We will definitely write about the evaluation of this experiment.

### Summing up

I shared these five steps in the second phase of Starting up Smoothly mostly as project documentation. I also hope that reading this blog post others might be inspired by what is possible (in government!) and maybe even learn something about the user-centred co-design process we followed in our work.

Looking back after just over 1 year, this project was super-fast, especially given that it happened within a government context and involved three independent government organisations that work under three different ministries. It took 9 months from only an idea to a public pilot of three organisations. The speed of development was possible because the people involved where dedicated to experiment, to work collaboratively and share their knowledge.

If there is one thing that all of the team members can agree on, I am sure it is this one: **Making things happen was more important than making it perfect.** Even though we tried hard to make it as perfect as possible.

## Informing about the service

In order to have one common entry point for users to get to know about the Starting up Smoothly service we created a very simple website: startingupsmoothly.fi

Here we linked the starting pages of the three different bots but also had a short explanation about the project as well as informed about events and gave people the possibility to contact us directly.

We can say that this simple website, the blog posts we wrote, a small business-card sized flyer we used during events and a common press release from all three organisations were the only marketing efforts for the project. The press release can be found, for example, here: https://migri.fi/en/artikkeli/-/asset_publisher/tunnetko-kamun-patrekin-ja-verobotin-chatbotit-neuvovat-yhdessa-ulkomaalaista-yrittajaa

*Screenshot of Starting up Smoothly website*



*Businesscard-sized flyers used in events*

## During the pilot

During the pilot phase the working practices changed quite radically compared to before because the goal of the collaboration shifted at that time: Rather than creating something new together, each organisation needed to check the quality of the work done before. This could only be done by the experts in a content area themselves, as for team members from a different organisation it is almost impossible if the bot behaves as it is intended to.

From creating new content, the work shifted towards maintaining existing content. This means:

On a regular basis, each organisation checked their chatbot's conversation logs and unknown messages to see how the bot performs in real use. If problems were found within one organisation's bot the organisation fixed those by themselves. They either adjusted existing or created new content, added new test or training data, adjusted synonyms, or found other ways to handle the errors. For problems relating to transfers we had a common file for all organisations, where each team member reported found issues. The new entries in this file were then discussed in common online meetings on a regular basis, where the team would try to find solutions all together or assign an error to a specific person.



*Screenshot of the transfer error reporting file*

To keep updated about the conversation monitoring and found errors, but also to discuss upcoming interesting events,

blog posts that should be written or the future of the project, we had regular online meetings with the whole team. In the beginning these meetings happened every week, later on only every other week. Over time we found less and less points of discussion in these meetings, but we kept them on a bi-weekly basis for 1h until summer 2019 (sometimes they took only 30mins though).

While before the pilot we had our heads deep into the work itself, during the pilot we now took time to document what we had done, what we had learned and tried to improve working practices for our team. We also started to think what we would do differently next time we, for example, onboard a new organisation to an existing project.

## User testing

One important element of the Starting up Smoothly experiment was getting feedback from users early on. We, the two lead designers, believe in user centred design and development and it was clear from the beginning that we use this methodology within this experiment.

All content designers and project managers attended or ran at least one user testing round. This is something we see crucial because it helps the team to understand how users interact with the service in real life.

In the first phase of the project we had already run one



*Example of a user testing situation (photo: Janne Mattila)*

round of user testing with immigrants who had recently arrived in Finland and people abroad still considering Finland for starting their business. In the second phase of Starting up Smoothly, before going live, we ran three more rounds of user tests with slightly different focuses: The first round took place in the end of September 2018 and only tested the very first version of PatRek's content, which at this time only included one company type: private traders.

The purpose of this testing round was to test the PatRek's conversation logic with just one company type in order to receive feedback before duplicating a false logic to other company types.

The next two rounds of user testing took place in November 2018. Here we tested how the three chatbots worked together. In the first round many technical issues were discovered but step by step we could eliminate technical error and get feedback on the user experience of transferring from one bot to another. We had hypothesised that users would hesitate before transferring from one bot to another since this is an entirely new concept. Instead, users were positively surprised by how smoothly they were switching between the content of different organisations and most users understood immediately, that they were talking to another organisation after the transfer. This was the second of our main concerns for the project, but as we saw in the tests: It was not a problem to most of our users!

After we started the pilot, we ran one more round of official user tests during March 2019. Here we tried to understand how the current pilot was perceived and what could be next development steps: All users were positive about the Starting up Smoothly service and said that the answers they got from the chatbots were helpful and felt trustworthy. They all noted that they would use the service again and would hope for even more promotion since currently Starting up Smoothly is not marketed well enough. We learned that the more advanced a person is in their process of starting a new business the more industry-specific information they would need, and there the current Starting up Smoothly service was not very helpful. This is not the main focus of the bots and insofar the feedback was expected.

Generally, testing early and often with real users of the service has helped us to develop Starting up Smoothly into the direction where it is today: Most users easily understand that they talk to three different organisations, without having to know about the how and why, but from their perspective it is a seamless interaction. Thus, through user testing in the course of the experiment we have validated that the chatbot network concept works from the user perspective.

## Blog: Collaborating to develop a chatbot network



*PRH and Migri workers discussing a user dialog that crosses organisational boundaries. (photo: Suse Miessner)*

*Authors: Laura Halonen, Milja Kiviranta, Tuija Pajukka*
*Published: May 2, 2019*
*Edited: Suse Miessner*
*Permalink: https://medium.com/inland/collaborating-to-develop-a-chatbot-network-6b3ebede4e40*

**In this guest blogpost we asked writers from three organisations to share their points of view on creating content for a chatbot network among three organisations: Our own Laura Halonen from Migri, Milja Kiviranta from the Finnish Tax Administration and Tuija Pajukka from the Finnish Patent and Registration Office (PRH). The three collaborators draw their experiences from the Starting up Smoothly project (www.startingupsmoothly.fi), which Inland is leading since April 2018.**

The aim of a chatbot network is to fill the gap between user needs and organisations' siloed operations. Although each organisation is responsible of their own content, developing a multibot-network requires inter-organisational collaboration also in regard with content creation. Otherwise the result may not be a user-serving network of chatbots, but rather old siloed operations in an up-to-date format.

### How then to succeed in the inter-organisational collaboration…?

Instead of having separate projects in each organisation, developing a multibot-network requires participants to collaborate. Firstly, a key to actually achieve genuine collaboration is to cross organisational boundaries when doing actual content work. Arrange time and place to meet and work together regularly. Brainstorm together—and

spend enough time on it! Establish shared practices and channels to keep in touch with each other—you may gain an external view for you own work at the same time (synergy effects).

Maintain the transparency among content work: don't hide your own content from partners and be interested also what's going on with their's. Also sharing know-how beyond organisational boundaries leads to a win-win situation. Take an advantage of support and help from more experienced project members! Additionally, ensure that each organisation is committed to common goals. This means both, working together content-wise but also reserving enough time and resources to do so. And sometimes less people, but rather more of their time is needed.

## Stick to the shared perspective

When planning the whole content, keep in mind what's the shared inter-organisational goal. What truly brings value to the customer, and not just your organisation? When thinking (and acting!) from the shared-perspective, the content is more likely to serve the customer better. Especially, if there's little time to spend on content creation it may be tempting to just "mind your own business" and only focus on finishing content of your own organisation. Instead, collaboration requires developing a shared, inter-organisational perspective with your partners—and sticking to it!

## Follow customer needs

Okay, now you have a super intelligent chatbot mastering a wide range of great content—but does it make sense to your customer? Don't settle just for the first solution you come up with and be critical on how the content actually meets user needs. Consider carefully:

· What the customer could ask at this point?
· What help does the customer probably need at this point, but may not be able to ask?
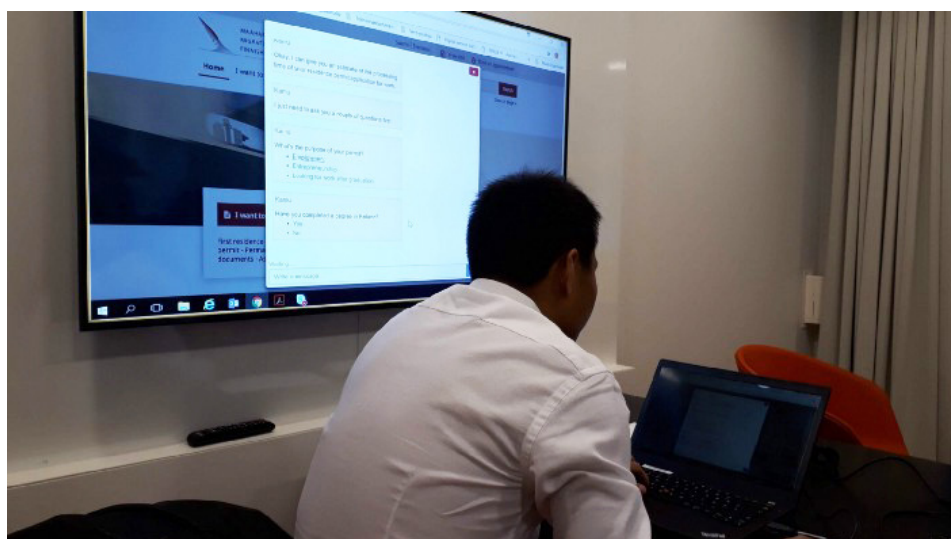


*An entrepreneur from China was in Helsinki during out user testing phase (photo: Janne Mattila)*

- How does the customer get a bigger picture and knowledge that is both useful and easy to understand?

Do not only assume, but make sure you're moving into right direction by doing user tests. By testing your content with real users you'll gain understanding how the customer sees the content and get insight how the content actually works. Users can also give you useful tips or suggestions how to make your content even better. And another thing to remember, always have at least one person from each organisation with you for user testing and go through the results together.

**Ensure the consistency with governmental lingo**

Last but not least, we're to share not only the best practices but also the stumbling blocks within collaboration. Sometimes administrative lingo differs in different organisations. When writing chatbot reply-texts we tend to stick to those expressions and concepts we're accustomed to. Choice of words gets even more complicated when there's no proper, well-established English translation available. As an example, we struggled when trying to find a proper translation for a Finnish word **yksityinen elinkeinonharjoittaja** (which practically means an entrepreneur doing his own personal small-sized business) as it can be translated in two ways **a private trader** or **self-employed person**. From a user-perspective this may appear chaotic or at least inconvenient—same concepts should be referred to with same expressions despite the current chatbot. Therefore, consistency among key words and expressions is one thing you should discuss with your partners.

A second article about chatbot content design is by Suse Miessner. This article does not explicitly refer to the chatbot network, but we see it as a contribution to how to design chatbot content in general and it also draws from learnings during the Starting up Smoothly project:

# Blog: 1 year of chatbot development—10 best practices



*A mockup Migri created when introducing Kamu in May 2018*

*Author: Suse Miessner*
*Published: 13 Feb 2019*
*Edited: Laura Halonen & Mari Humalajoki*
*Permalink: https://medium.com/inland/1-year-of-chatbot-development-10-best-practices-efedcec18bef*

**At the Finnish Immigration Service (Migri), we have been developing our chatbot for a bit over a year now. It has been live since May 2018 and has since had more than 45.000 conversations with its users. Kamu gets good feedback from the immigrants, and it has become an integral part of Migri's customer service. On top of that, we are expanding the content design team soon. We think, it is a good time to look back and answer some questions: What have we learned in one year of designing content for Kamu? What are the best practices that are not only useful for us at Migri, but that other organisations could adapt?**

Here is our list:

## 01 — Decide on the content area to cover

With no doubt, the most important best practice is: Decide on your content area based on your users' needs. It is not about what your organisation thinks customers need, but the users' real situations. We usually prioritise content based on our substance units' and customer service experts' opinions, as well as organisation's statistics. Since we follow conversation logs, we also use frequently asked questions for prioritisation.

As a second step, you need to understand what effort goes into the content area you have chosen. In other words: how wide is the area? Can you break it into smaller pieces that can go live independently of each other? Aim to get content out quickly, but make sure that

each chunk of content you publish brings value to your customers.

## 02 — Put yourself in the shoes of your user

When creating content for a chatbot, it is equally important to understand your users. We try to put ourselves in the shoes of the immigrants: What are their needs? How would they ask this question? Is this the answer they would expect? If we are not sure, we try to consult outsiders. Those are often people in the organisation who do not work in this particular substance area.

Understand how to talk to your users in the chatbot. The language knowledge within our user group, immigrants, varies a lot — from elementary level all the way to native speakers.. The magic lies in using simple language but not simplifying too much. To do this, consult people who talk or write to your users on regular basis and talk to the users yourselves! Do user testing! Often! Everyone in the team! It will help you gain a deeper understanding of the customers' use of the chatbot content and their frustrations with the bot.

## 03 — Think about the personality of your chatbot

Establishing a personality for your chatbot helps your content creators when writing the answers. The personality may include the main traits of your bot: Is it proactive or reactive? What's its name and gender? How does it address people?

We recommend testing a few different personalities with your users — not only because it is great fun, but also because it is the best way of learning what customers expect from your organisation and your chatbot long before you launch the pilot.

## 04 — Establish common content creation guidelines

Establishing common content creation guidelines early on in the process will have a long-term benefit and impact. They ensure consistency of the produced answers when several content creators are involved. Even if you start with a small team, over time it will grow, or one content designer replaces the first one. In the content creation guidelines, we considered our target group, our organisation, our chatbot's personality, as well as the technical restrictions of our chatbot software. For example, think about the spelling logic to use in English (British? American? Canadian? Australian?) or how to format numbers (1000 or 1.000 or 1,000?). It will confuse users if you are inconsistent with these and take a long time to change later.

## 05 — Train your content creators in writing

In our organisation, we do not have content creators who are trained writers. Our content creators are motivated and learn a lot by doing, giving each other feedback and hearing feedback on their texts from users. Nevertheless, consider sending your content creators to specific trainings on content creation in digital channels and writing for your target group. We have used so-called "Plain Finnish language" trainings for our content creators and find them extremely valuable.

## Migri customer service chatbot personality

The design of the personality is based on 4 types of user involvement: (1) Workshop with Kuhmo customer service personall, (2) Survey in Helsinki Service point, (3) User testing of 3 chatbot personalities in Helsinki, (4) all Migri workers to vote on the name of the chatbot.

Name: Kamu
Species: Robot
Gender: Genderless
Characteristics: Knowledgeable
Friendly but not joking
To the point
Understands quickly
Trustworthy

"I know all about Migri-related questions. You can trust my answers."

Executive director ———●——— Best friend

distant ———●——— close

cold ———●——— friendly
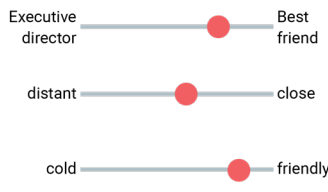
Use of language:
• Talks customers own language
• Clear and easy language (no internal slang)
• Uses small talk responses when appropriate: only when upcoming dialog takes a few questions to determine the right answer

Use of emojis:
• Emojis are used selectively to make the discussion more humane
• Never uses more than 1 emoji in a row
• Uses especially positive emojis & country flags

## Kamu content creation guidelines

### Intends

Naming:
• descriptive keywords should be used in the name of the intents.
• Names of child-intents should include the keywords of their parent-intents. The parent-intend name always comes before the child intend name.

citizenship application

parent: citizenship application
child: citizenship application form

Translation:
• When creating intents, they should also be translated to the languages that are supported in the chat.
• If not, use a hyphen as a placeholder for the missing translation.

### Actions

Action replies:
• Max length per reply: 200 char
• Max number: 3

Action links:
• Naming: as short as possible.
• Max length: 40 characters
• Max number: 6

External links:
• Naming: as short as possible
• Max length: 45 characters
• Max number: 2
• first action links, then external links

co-design team at Migri
www.inlanddesign.fi

*Kamu personality poster*

*Short version of the content creation guidelines*

## 06 — Understand your substance

We recruited all our current content creators from within the organisation. This means that all of them are substance experts in different areas. This is a big benefit when creating content for our chatbot. But even if you hire substance specialists, prepare to spend time with other substance experts who specialise in the area you are working on. Learn from your substance experts and listen to their opinions. We use everything from brainstorming to workshopping and review groups to get feedback.

## 07 — Well-planned is half done

We have started to teach chatbot content creation to other public organisations in Finland. What we see often is people rushing into the chatbot software. But to us, a big factor is planning the content well BEFORE putting it into the software itself. This means that we draw the conversation logic on big sheets of paper. We use post-its to imitate conversation flows. Sometimes we even play through an example conversation to understand how it feels. Putting time to planning the content helps us in taking user orientation seriously.

*Early example of a conversation flow chat*



*Team working together to improve the service*

## 08 — Ensure teamwork among your content creators

When multiple people write replies for one single chatbot, they need to ensure consistency. To reach this, we brainstorm together. We discuss drafts of the content in early stages. We proofread and translate each other's content. Content creation guidelines serve as a basis, but practical collaboration between the different writers is essential.

## 09 — Get feedback on your content from substance experts

You might have guessed this one already after reading number 6, but it is so important to incorporate feedback from the specialists that we mention it again here. Before your content goes live, talk to your substance experts. We have a review group consisting not only of experts from all decision-making units, but also legal, communications and customer-service professionals. All this is to ensure that the content is as accurate and as good as it can be. Involving this many people takes time away from their other work. This is why it is important to ensure that the substance experts have dedicated time to take part in content development. We produce the content in one language first. Substance units approve it, and then we translate the content into the other languages that our chatbot serves the immigrants in.

## 10 — Study your logs regularly

If you have followed all of our best practices above, you have done everything to ensure the best possible quality of your content before it goes live. Still, the best way to see what works and what doesn't is to follow the conversations that real users have in real situations. This is why you have to follow the logs (and make sure you invest in a chatbot software that lets you do this). You may find out users use different words than you expected or that they expect a different answer. When you spot errors, you can make changes immediately. This will

happen all the time. The more users you have, the more errors you will find. Make sure to prioritise what you fix immediately and what you put into the backlog of your content production team for the future.

Make sure you have dedicated time and responsibility within the team to follow conversations. This is also a great way for the content designers to learn about the kind of language users use. Additionally, it lets you discover new content areas which users are expecting answers on, but you are not covering yet.

These are our ten best practices when creating content for chatbots. They were created with input from our content designers Laura Halonen and Katja Rintala as well as our AI supervisor Mari Humalajoki. We share our thoughts as a reflection for ourselves, but also to generate discussion and hear what others find as useful tools and methods when creating chatbot content.

Looking back at one year of creating content for our chatbot Kamu, the one thing that we have not dedicated enough time to is user testing. This is why it doesn't appear as one of the ten items in our list. We were so busy getting Kamu up and running, extending its content and thinking about new Kamu experiments that we didn't have enough resources in the team to take user testing serious enough. And we clearly want to change this in 2019!

## Onboarding a new organisation

How to take a new organisation on board to the chatbot network project was one of the research questions for the Starting up Smoothly experiment. During the first phase Vero joined in creating the demo with almost no previous experience on creating chatbots, while the Migri team was already preparing Kamu's launch for a while. However, since the chatbot network did not exist yet at the time we do not think that Vero was onboarded to the project. Instead, Migri and Vero teams created the chatbot network together from scratch. In the second phase we onboarded PRH to the project. We have written blog posts from two different perspectives towards this: First is Olli Ilmarinen's blog post from the perspective of the organisation being onboarded to the project, and second is Suse Miessner's blog post from the perspective of Migri, who carried out the onboarding of the new organisation:

# Blog: Onboarding a new organisation for a joint chatbot service
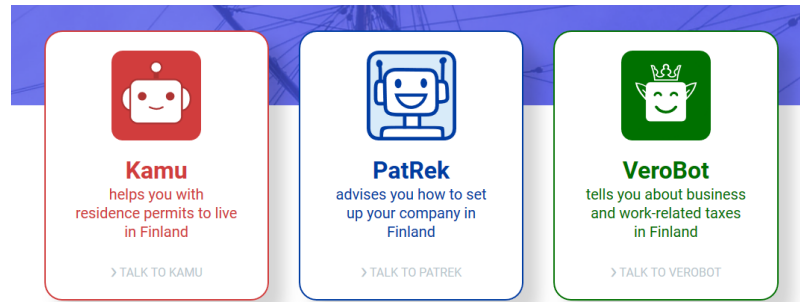


*Screenshot from startingupsmoothly.fi*

*Author: Olli Ilmarinen*
*Published: 15 Mar 2019*
*Edited: Suse Miessner*
*Permalink: https://medium.com/inland/onboarding-a-new-organisation-for-a-joint-chatbot-service-97e505547f7f*

**In this first guest blogpost Olli Ilmarinen, Development Specialist at the Finnish Patent and Registration Office (PRH), describes PRH's experiences and lessons learned when joining the Starting up Smoothly project (**www.startingupsmoothly.fi**) in autumn 2018.**

Creating a new service is never an easy task to do when you are about to use a new type of technology you have no previous experience. Joining new partners to create the service makes it more challenging. How can it be done so that you are satisfied with the results as a whole — I mean not only with the new service but also with the way it was created? In this post I share my thoughts and our team's experiences onboarding PRH onto Starting Up Smoothly pilot project.

## Starting Up Smoothly in a nutshell

You may have read this press release late November 2018: "*Finnish Patent and Registration Office (PRH), Immigration Service (Migri) and Tax Administration (Vero) joined forces to offer a joint chatbot service to foreign entrepreneurs in Finland. This is the first time that government agencies in Finland test a service where several chatbots answer customers' questions together.*"

If not, no problem. In short, our common project was about creating a joint chatbot channel based on three stand-alone chatbots backed by artificial intelligence (AI) of one system provider. It was the first time these three organisations worked together in an initiative like this. PRH team had no previous experience working with artificial intelligence solutions. We did not know Migri people either. Moreover, our office was a newcomer in chatbot technology area whereas Migri and Vero had been working together on their chatbots for a while. Hence

the blog post title.

## Some hints and tips to start with

Firstly, when you enter into the new cooperation find time to learn about the project: its background, objectives and what your colleagues have achieved so far. Now that you are joining a project that has been already been going on for a while it is like jumping on moving train: the train has its predetermined track and it is you, the one onboarding the train, who should adjust your steps to match the project timeline.

Secondly, allocate time to project work. Sounds self-evident so why to raise up this issue? Because it is so much easier to say than to do. We benefited a lot from the work Migri people had already learned and done. We were well trained and guided by them and by the chatbot technology provider. Without their valuable support we would have never made it in such a short time with our part-time project team.



*PRH's team with their Trained AI Trainer certificates (from left to right): Olli Ilmarinen, Teemu Vaittinen, Tuija Pajukka and Ari Varila (photo: Inland Design)*

However, do not rely too much on just copying the others work (as we did to some extent). You still have your own work to do. It is you who knows your customer cases best. Your customers need your inputs to create a chatbot with relevant content for them, as part of the joint service.

And thirdly, book time for the project in your calendar no matter how difficult it may seem. In an ideal world you had all the time and resources for the project. You would not face a situation where the development project competes against your operational daily tasks. They tend to overrun any development work. You may also think that you allocate more time and effort for the project during its execution. If you have no 100% project resources you will easily fall into the trap of overconfidence, hoping to find the time later, somewhere and somehow.

## Create the common project

In order to start good cooperation, the first step is to get to know each other. This is important in any endeavour where people do not know their co-workers in advance. Spend enough time to discuss with your colleagues how they think and feel about the project. Try to find a consensus what the project is all about. Are there any doubts or concerns? Are the project objectives clear and do we see the project aim in the same way?

The earlier you find any out any wrongly interpreted project targets or misunderstood results the better. Since not all the people were there right in the beginning of the project, they may not all be clear to everybody. Therefore, speak about the project. And not only about the project. Get acquainted, too. Having a kick-off event with some free time to get to know other project members is not a bad idea either.

Learning to work together is the second step. Even though the organisations may look very similar the working cultures are often different. Not to forget that people may have quite different working styles. We had a project room at Migri, which made us not only to work together but also feel like one single team, despite representing three different offices. In addition, we used a common online project tool to share information, which I found very important during the chatbot development stage. These common project spaces made it possible to ask and get feedback right away. They also helped us to target the common project goal.
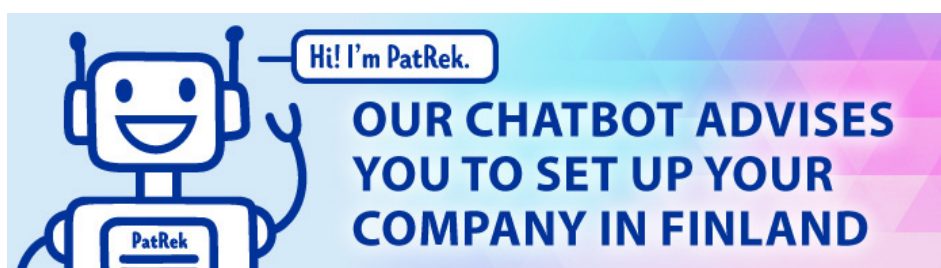


*PRH's web banner for introducing PatRek*

## So far so good … so what?

The above is not only a good title (of Megadeth's 1988 album) but it is also a valid question to ask how to stay onboard. What are the next steps of continuing with the joint service? Or using the earlier metaphor, now that we are on the same train how are we going to stay there?

For Starting Up Smoothly there is no definite answer to this question at the moment. Most likely we will continue, possibly deepen the cooperation further. Since this was PRH's first experiment in the area of chatbots, we are yet to discover their full potential to our customer service.

What is clear is that we have learned a lot. Not only about the AI technology and creating our chatbot but also of our services and their development. These are still to put into practice at our office. Most importantly, we must have a clear plan to utilise chatbot(s) as

part of daily operations as well as allocate more resources to maintain and develop them. Being onboard is not quite enough if you want more than just a nice journey with others. You need to get where you want to go, together, for sure.

## Blog: Onboarding a new organisation to "Starting up Smoothly"—A Migri perspective
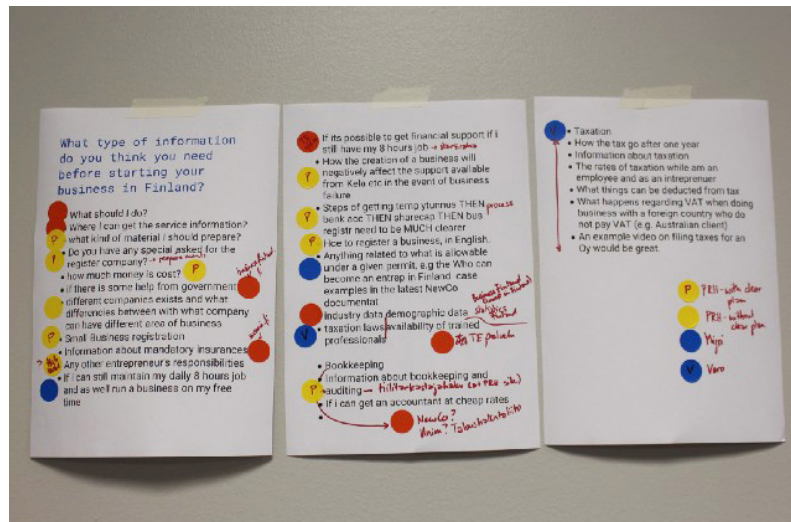


*Outcomes from PRH customer survey, which was based on Migri's and Vero's previous customer survey*

*Author: Suse Miessner*
*Published: 20 Apr 2019*
*Edited: Mariana Salgado*
*Permalink: https://medium.com/inland/onboarding-a-new-organisation-to-starting-up-smoothly-a-migri-perspective-ba25b372da67*

If you follow our Inland blog or twitter even just every now and then you've probably heard about Starting up Smoothly: It's the project to create a network of independent chatbots. If you haven't heard anything about it, I encourage you to scroll to the bottom of this article and read through some of the links I provided there.

In this article I want to focus on how we onboarded a third organisation, the Patent and Registration Office, to the project. The goal of this process was to get the PRH team up to speed as quickly as possible. I hope that by sharing the phases of onboarding, other organisations can learn. This blogpost also shares some insight on how to create a chatbot in general and is rather documentary. If you want to read about the experience of onboarding to the project from the perspective of the new organisation, have a look at Olli Ilmarinen's blog post here.

**Phases of onboarding — from interest to start of being part of the cross-organisational team**

Onboarding PRH took place in four phases, which I describe in more detail in the next subchapters. The phases might overlap, so their order is based on when each phase starts:

**Phase 1:** Initiate the collaboration

**Phase 2:** Starting the collaboration

**Phase 3:** Defining & sharing team working practices

**Phase 4:** Defining the new chatbot

When the Finnish Patent and Registration Office (PRH) joined the collaboration to create a chatbot network, the project had been ongoing for about 6 months. Previously it had been a collaboration between the Finnish Tax Administration (Vero in Finnish) and the Finnish Immigration Service (Migri). Working for only 6 months together in an experimental project meant that working practices were very flexible at this point. So, let's go through the four phases of onboarding PRH to the project one by one:

### Phase 01: Initiate the collaboration

This phase spanned from the first contact PRH made to the chatbot network team to express their interest, to the organisational kick-off event, where management-level project partners were present. In the organisational kick-off we discussed

a) the common goals for the project,

b) the high-level responsibilities that were needed for the next phase

c) needs for team members, their responsibilities and engagement in the project.

When onboarding PRH this phase lasted from May-June 2018 to mid-August 2018. Vesa Hagström, Migri's Chief Digital Officer, was mostly leading the initiation and negotiating with the upper management level on PRH's side. One feedback we got early on was, that the roles and responsibilities of the team members that would do the actual chatbot work were not clear in summer 2018. For this reason, when the four new team members joined the project, they were rather confused what their roles in the team would be. The main learning from this is that project member roles & related expectations are never to be taken for granted: We, from Migri side, knew the roles needed within the PRH team, but we did not manage to communicate it clearly to the new organisation.

### Phase 02: Starting the collaboration

In the next phase we started the collaboration with the team members that were in charge of producing the chatbot solution for PRH. We started with a Team kick-off event in June and August 2018. Here it was important that all team members were present as we

a) discussed expectations of all parties from the new organisation,

b) demoed the current solution and explained how it works and why, and

c) established a common timeline for the upcoming collaboration.

Actual working together started only in August 2018 and one new

team member joined at that time. After the second team kick-off the actual work started for PRH. They **trained** and got certified to use the boost.ai software. Boost.ai is our current software provider.

In a next step we shared our best practices and guidelines for designing chatbots. This included discussions on how to design a chatbot from the end users' perspective.

## Phase 03: Defining & sharing team working practices

In the third phase of the project we agreed on **project roles and responsibilities** within the project team. In the first two phases of "Starting up smoothly" we have used RACI charts for this. We have also defined the following roles within each organisation:

**Project manager** responsible of initiating, planning and managing the team work

**Content lead** Responsible for the content of the organisation (action replies, personality, test data, initial training data)

**Content designer** Create content within the boost.ai software (action replies, test & initial training data)

**AI Trainer** Responsible for the AI model of the organisation (model performance & maintenance, training data, synonyms, monitoring conversations)

**Substance expert** Assist in content creation, do not work in boost. ai. This role is not always defined and present within the Starting up Smoothly-project team. However, it is important to have access to all required substance expertise within the organisation.

In a next step we discussed and made initial plans how the PRH **team work**s together internally and how they collaborate with the existing Starting up Smoothly-teams: As an example, we worked in the same physical space every Tuesday. This gave us time when teams could concentrate on their work, either for their individual organisation or among different organisations.

## Phase 04: Defining the new chatbot

After training the new organisation's team and defining the common working practices is when the actual content work started. If you want to be very picky on "onboarding" then you could say that anything from this phase onwards is not any more onboarding a new organisation but creating a chatbot. However, since we had 2 existing chatbots at this point and PRH was missing theirs, I include defining and developing the new chatbot as phases of onboarding PRH to the project.

As part of the Starting up Smoothly-project we had already decided our **target audience,** foreign entrepreneurs who want to start their business in Finland, and Vero and Migri teams had an overview of what kind of content needs to be built. For PRH we gave an overview of the user research outcomes from the previous phase and discussed together what they meant for content creation.

Based on this knowledge we **defined new user personas**, fictional representations of the service's real end users based on real data and user interviews. This was a common activity among all participating

organisations. The user personas needed to have touch points with all organisations in the network:



**Yu Chen**
starts power plant in Northern Finland as a susidiary of a Chinese mother company.

**Vera Allik**
moves from Estonia to Helsinki to start her own hairdressing saloon

**Berat Asani**
finishes his Master's degree after 2 years in Finland and starts a food import-export to Turkey.

Next PRH needed to **establish the personality** of their chatbot: What kind of language does it use? What's the tone of voice? Is it like talking to the CEO of the organisation or to a low-level expert? What does the chatbot look like? Is it humane or robot-like? How does it use humour or emojis? These and more questions needed to be answered before starting to design actual content. User research, such as interviews, surveys or user tests, were used to support the personality definition. We used insight from the previous phase of Starting up Smoothly, but PRH also conducted their own customer survey. The survey was based on previous user survey that we conducted at Migri, and the improved version done in the first phase of Starting up Smoothly. Having material to base their survey on, made it a lot easier for PRH to design their own survey.

In the next step we **scoped the content** of the new organisation. We created a high-level overview of all possible content and used the user personas to define a small area to start with: This was the most important content for PRH to build. The content was later expanded to other areas step by step. PRH decided to focus the content only on questions regarding starting a company, and even more specifically, private traders and limited liability companies. This helped the team to focus on a small area that they could actually finish in a rather short time. Based on the first company type, we then extended the scope to the second.

After we have defined the scope of content, we designed the high-level content structure for the organisation. This includes the high-level intent structure as well as the more detailed structure for one of the scoped content areas. Building this high-level and reusable structure from the beginning and thinking of future content areas helps in building a future-proof model from the beginning and saves lots of work later on.

When we had done all these four phases together with PRH, they started the actual content creation process. If you want to know more about creating content for chatbots I encourage you to read these posts in our inland blog:

1 year of chatbot development — 10 best practices

Collaborating to develop a chatbot network

*Initial intend tree for Limited-liablity companies (short LLC)*

### Feedback and learnings

Reflecting back at onboarding a new organisation to the chatbot network project there are a few things I would do differently next time:

**Make the roles clear earlier**

Most of the confusion among the PRH team was caused by not knowing what is expected and who does what. During that time, I thought that the team members will learn by doing (which they did), but today I believe that by being more explicit PRH might have gained speed earlier and with less confusion for the new team members.

**Speak the same language**

This learning has to do with the first: The unclearness of roles, responsibilities and tasks in the beginning had to do with not speaking the same language. We all spoke English in the team, but being deep in the area and technology, we might have used lots of words that were clear to us, but much less clear to the new team members. I personally feel this is one of the areas that I will never stop to learn during my lifetime, so I can only try to get better.

**Be clear about the effort**

One of the struggles we had during onboarding PRH was time commitment. Again, this is related to the clear roles. It was not understood in the beginning that creating chatbot content takes a lot of time. This is of course related, to what type of chatbot you create: In our case we want to give answers within the chat, and this means that we need to create the content specifically for this purpose (we cannot copy-paste from a website).

The feedback we have received from the PRH team about their onboarding experience was overwhelmingly positive: They felt they have learned a lot during this collaboration, they have understood how much effort it is to create a chatbot and gained understanding how a chatbot can help their customers on a hands-on practical level.

I am the coordinator of this collaboration and was in charge of planning and conducting the onboarding of PRH to the project. I had previously been involved in setting up the chatbot team at Migri as

well as given advice to Vero how a chatbot team can be run, when we started the first phase of Starting up Smoothly. I invested about 1 day a week to prepare the next onboarding session during August to October 2018. Luckily, we had documented the process of creating Migri's chatbot personality and starting to create content for it. This made the onboarding of PRH more efficient for all sides.

All in all, I think onboarding PRH to Starting up Smoothly was really quick and effective. We had a few hick ups but generally we're all happy with how it went.

### Management group

In the second phase of Starting up Smoothly we set up a management group to oversee the project from the higher level of all three organisations. As the team grew bigger and a new organisation joined, we saw a need to see the managers of the team members actively working in the project, informed about the progress. We could also use these meetings to agree on the next high-level goals and communicate team needs to each organisation involved. The management group meetings took place ones a month.

In the following Finnish blog post members of the management group give their point of view of Starting up Smoothly, written after the agreed pilot phase was almost over.

For those not speaking Finnish here are a few major points Olli Ilmarinen, Miika Wires and Vesa Hagström raise:

- The Starting up Smoothly experiment has raised national as well as international interest as the first network of independent chatbots, which shows concretely how the focus on events in life, can be formed into a single seamless service.
- The speed of development was rapid, in just 9 months from the idea to a public pilot.
- The writers wish to scale the experiment up and at the same time to keep the collaborative habit of working across organisational silos.

## Blog: Valtionhallinnon Chatbot-verkosto neuvoo ulkomaalaisia yrityksen perustamisessa
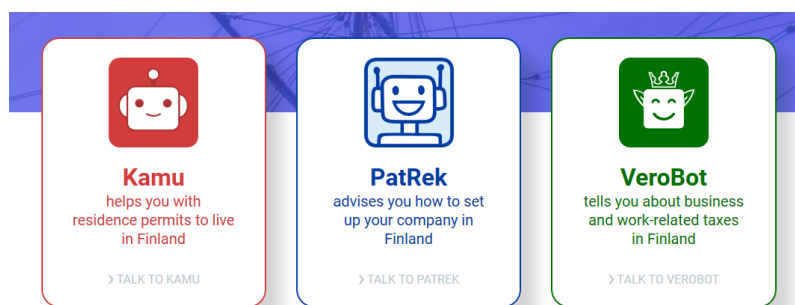


*Screenshot from startingupsmoothly.fi*

*Authors: Olli Ilmarinen, Miika Wires, Vesa Hagström*
*Published: 22 May 2019*
*Permalink: https://medium.com/inland/valtionhallinnon-chatbot-verkosto-neuvoo-ulkomaalaisia-yrityksen-perustamisessa-44eb1e0c4443*

**Seuraavan vierasblogin takana on Miika Wires (Verohallinto) yhdessä Vesa Hagströmin (Migri) ja Olli Ilmarisen (PRH) kanssa. Kirjoitus avaa ohjausryhmän näkökulmaa Starting up Smoothly -projektin haasteisiin ja saavutuksiin.**

Maahanmuuttoviraston (Migri), Verohallinnon ja Patentti- ja rekisterihallituksen (PRH) yhteinen chatbot-verkosto lähentelee puolen vuoden ikää. Bottikaverukset Kamu, PatRek ja VeroBot ovat palvelleet ulkomaalaisia asiakkaita niin maahanmuuttoon, yrityksen perustamiseen kuin verotukseen liittyvissä kysymyksissä viime marraskuusta lähtien. Bottiverkosto syntyi virastojen välisenä yhteistyönä ja kokeiluna, jonka tarkoituksena on helpottaa yrityksen perustamista Suomeen sekä työskentelyn aloittamista täällä ("Starting up smoothly").

Olemassaolonsa ajan botit ovat syventäneet omaa asiantuntijuuttaan ja myös oppineet tuntemaan toistensa vahvuusalueitaan entistä paremmin: botit nimittäin osaavat tarvittaessa siirtää asiakkaan kysymyksen toiselle botille, jos aihepiiri vaihtuu dialogin aikana. Eikä pelkästään siirtää, vaan myös ehdottaa jutustelun jatkamista bottikollegan kanssa, jos asiakkaan kysymys vaikuttaa osuvan paremmin toisen botin vahvuusalueelle. Jos esimerkiksi VeroBot tunnistaa, että asiakasta saattaisi kiinnostaa verotuksen lisäksi myös yrityksen rekisteröintiin liittyvät koukerot, ehdottaa se siirtoa PatRekille. Tai jos oleskelulupa-asioiden lisäksi asiakasta voisi kiinnostaa myös verovelvollisuuden syntyminen Suomessa, osaa Kamu tiedustella asiakkaan kiinnostusta vaihtaa muutama sana VeroBotin kanssa.

Bottiverkosto syntyi vain parin kuukauden työrupeaman tuloksena kolmen viraston yhteiskokeiluna, mitä voidaan pitää melkoisen rivakkana toimintana. Korvapuustien kulutus jäi minimiin, kun

asiantuntijoitamme koulutettiin tekoälyn perusteisiin. Aika coolia on myös se, että bottiverkostomme taitaa olla ensimmäinen alallaan maailmassa.

**Vesa Hagström, Maahanmuuttovirasto**

*Kansallisesti ja kansainvälisesti on valtavasti mielenkiintoa tällaisille chatbot-verkostoille. Sen sijaan, että ainoastaan siirretään yksittäisiä organisaatiokohtaisia palveluja tekoälyalustalle chatboteihin, on katsetta kiitettävästi nostettu siilorajat ylittäviin palvelukokonaisuuksiin. Kyseessä on siis laajamittainen palvelutransformaatio hallinto- ja organisaatiokeskeisistä palveluista ihmiskeskeisiin elämäntapahtumapalveluihin. Maahanmuuttoon liittyvät elämäntapahtumat ovat asiakasnäkökulmasta hyvin laajasti eri palveluja sisältäviä. Starting up smoothly-palvelu osoittaa konkreettisesti sen, että siilorajat ylittävät palvelut on mahdollista toteuttaa tekoälyä hyödyntäen jo nyt.*
Käy testaamassa bottejamme täällä:
http://www.startingupsmoothly.fi/

**Miika Wires, Verohallinto**

*Bottien hyödyntäminen verotuksen yleisneuvonnassa on ollut vielä kokeiluasteella, niin henkilö- kuin yritysverotuksessakin, mutta lähitulevaisuudessa tehoja ja kustannussäästöjä on mahdollista hakea melko laajallakin skaalalla (chatbotin hankintaan liittyvä Verohallinnon kilpailutus on parhaillaan vireillä). Sinänsä iso juttu, mutta niin on myös useamman viranomaisen muodostama bottiverkosto sekä sitä ympäröivä yhteistyö yli virastorajojen. Bottiverkoston teknisen pystytystyön lisäksi on ollut mielenkiintoista myös nähdä työskentelytapojen ja aikataulujen yhteensovittamisen jouhevuus sekä koko tiimin läpileikkaava yhteinen tahtotila, jota projektipäälliköt (Suse Miessner — Migri, Janne Mattila — Vero, Olli Ilmarinen — PRH) ovat eläneet, hengittäneet ja yhdessä tuumin määrätietoisesti buustanneet pitkin poikin projektia.*
*Starting up smoothly on kaikin puolin innostava esimerkki virastojen välisestä yhteistyöstä ja osoitus siitä, että perinteisen jäykät virastorajat on mahdollista häivyttää, kunhan saman henkistä hands on-porukkaa saadaan yhteisen leirinuotion äärelle, ja potkimaan karavaania liikkeelle. Tällöin tuloksia on mahdollista saavuttaa nopeallakin aikataululla.*
*Kokeilua voidaan myös pitää oivallisena tienviittana niin työn tekemisen kuin tavoitteidenkin osalta. Yrityksen perustamisen ja työskentelyn aloittamisen tulisi olla lähtökohtaisesti niin helppoa, että suomalaisen tai ulkomaalaisen yrittäjän alun, opettajan, tutkijan, koodarin tai muun tulevaisuuden toivon silmissä, siitä muodostuisi meille selkeä vetovoimatekijä ja kilpailuetu. Jokainen ymmärtää, että taistelu osaavasta työvoimasta ja investoinneista on tuskin laantumaan päin, joten jokainen aloite ja teko tienviitan osoittamaan suuntaan on tärkeä palvelus yhteiskunnallemme.*
*Chatbot-yhteistyöstä inspiroituneena Verohallinnon ChinaDeskin pohjalta käynnistettiin alkukeväästä projekti, jossa on tarkoituksena*

*kokeilla kokonaisvaltaisen palvelupolun luomista ei-ETA-maassa asuvalle startup-yrittäjälle. Ajatuksena on tunnistaa palvelupolun varrelta kaikki keskeiset vaiheet, toimijat, organisaatiot ja pullonkaulat tilanteessa, jossa muu kuin ETA-maassa asuva henkilö haluaa perustaa yrityksen Suomeen. ChinaDeskin kautta pilottikohteeksi valikoitunut Kiina toimii tässä eräänlaisena koealustana ja ponnistuslautana, mutta lopullinen horisontti muodostuu luonnollisesti kaikista maailman maista ja mannuista. Samalla testataan mahdollisuuksia sähköiseen ensitunnistamiseen, mikä vähintäänkin antaa arvokasta tietoa missiossamme ulottaa sähköiset palvelut entistä kattavammin myös ulkomaalaisten saataville (kokeilu kytkeytyy RTECO:n SisuID:n sateenvarjon alle). Luotettava ja kustannustehokas sähköinen tunnistaminen prosessin eri vaiheissa mahdollistaa palvelutason parantamisen merkittävästikin, mutta se myös ehkäisee väärinkäytöksiä ja laittomuuksia nykyistä tehokkaammin. Tässä yhteydessä onkin hyvä huomata, että palvelujen kehittäminen ulkomaalaisille ei ole Suomessa asuvilta asiakkailta pois, vaan päinvastoin, seurannaishyötyjä koituu kaikille.*

*Oikeastaan Starting up smoothly -kokeilu toimii esimerkkinä myös tässä suhteessa, esim., kun entistä viisaampina pohdimme minkälaisia ominaisuuksia ja kyvykkyyksiä Verohallinnon asiakkaille suunnatusta chatbot-ratkaisusta tulisi löytyä — puhumattakaan uudenlaisesta yhteistyön mallista eri palvelupolkujen ekosysteemeissä.*

### Olli Ilmarinen, Patentti- ja rekisterihallitus

*PRH lähti mukaan projektiin työstämään omaa bottiaan viime elokuussa koko lailla noviisina tekoälyyn pohjautuvien asiakaspalveluratkaisujen osalta. Olimme uudessa tilanteessa pitkälti myös kumppaneiden suhteen. Yritysten perustajille olimme toki kehittäneet Veron kanssa mm. YTJ.fi-asiointipalvelun, mutta siinäkin on ollut kyse kahden eri organisaation palvelujen viemisestä samaan portaaliin yhteiselle alustalle, ei yhdessä tehtävästä asiakaspalvelusta sinänsä. Migri taas oli meille täysin uusi kumppani ja heidän asiakkaansa meille uusia tuttavuuksia.*

*Näin ollen projekti tarjosi meille haastetta, paitsi teknisessä mielessä niin myös siinä, miten erilaiset palvelut ja asiakastilanteet saadaan sovitettua yhteen kanavaan. Heti sen alussa jouduimme miettimään yhdessä sitä, kuka itse asiassa on se asiakas, jolle palvelua tarjotaan, ja mitä kaikkea kukin meistä voi hänelle antaa. Myös tarjottavien neuvojen muokkaaminen sopivaan muotoon vaati työtä. Käytännössä tämä tarkoitti meillä PRH:ssa sitä, että kävimme PatRek-bottiamme opettaessamme yksityiskohtaisesti läpi mm. erilaisia yrityksen perustamiseen liittyviä ohjeitamme pitäen koko ajan mielessä sen, että botin käyttäjällä ei ole välttämättä mitään käsitystä siitä, miten asiat Suomessa toimivat.*

*Kaikesta tästä kuitenkin selvittiin kunnialla ja varsin hyvin tuloksin. Kuten Miika Wires toteaa, virastorajat on helppo häivyttää yhteisen chatbot-palvelukanavan avulla, kun vain saadaan kaikki samaan veneeseen ja soutamaan samaan suuntaan. Ja tämä onnistuu vain tekemällä yhdessä yhteistä palvelua yhteiselle asiakkaalle.*

*Kansainvälistäkin kiinnostusta herättänyt Starting up smoothly -kokeilu päättyy kesäkuun lopussa, jolloin on aika tehdä yhteenveto saaduista kokemuksista ja opeista. Päätettäväksi tulee myös bottiverkoston jatko. Jatketaanko entiseen malliin, pistetäänkö pillit pussiin vai otetaanko kenties hetken aikalisä? Reilusti plussan puolelle jäädään joka tapauksessa. Toivottavasti kokeilulla olisi myös laajempia vaikutuksia, niin että se rohkaisisi ripeätempoiseen yhteistyöhön eri puolilla julkishallintoa. Ja kuten hyvin tiedämme, pessimisti ei pety. Siksi vaikka nykyinen bottiverkosto ajettaisiin alas, mikään ei ota meiltä pois sitä, että olemme oppineet paljon ja saaneet muodostettua hyvän yhteistyöverkoston. Tämä tuottaa varmasti kaikille osapuolille hyötyä jatkossakin, myös muussa kehittämistoiminnassa kuin vain tekoälypohjaisissa palveluissa.*

## Statistics

The statistics of the Starting up Smoothly experiment can teach us few things about how users perceive and use the service in reality.

The numbers in this section all refer to the pilot period from 29.11.2018 to 07.07.2019. Usage numbers were taken out in two-week intervals, each starting Monday and ending Sunday.

## Number of conversations

In the pilot period the three chatbots had **53.098 conversations** with their users. In case of VeroBot and PatRek this also includes our own team's testing, as the two organisations did not have a separate test environment. This means an average of **240 conversations per day**, with the bots being online 24/7, on all of the 221 evaluation period days.

Most of the conversations are currently handled by Kamu, Migri's chatbot, accounting for 87% of all conversations. This is understandable since Kamu is available already since May 2018, has the largest amount of content covering a wider content area than just topics around starting a new company and currently is the only bot speaking both Finnish and English. From the graphs below we can see that over the time of the pilot period the number of conversations is rising quite a bit. Again, this is due mostly to the increased use of Kamu over time, while VeroBot and PatRek usage numbers remain on a quite constant level.
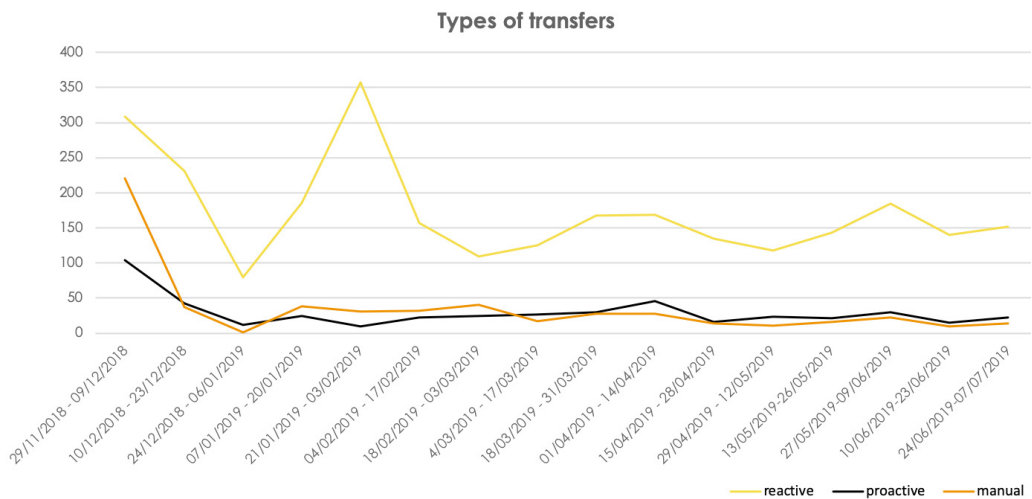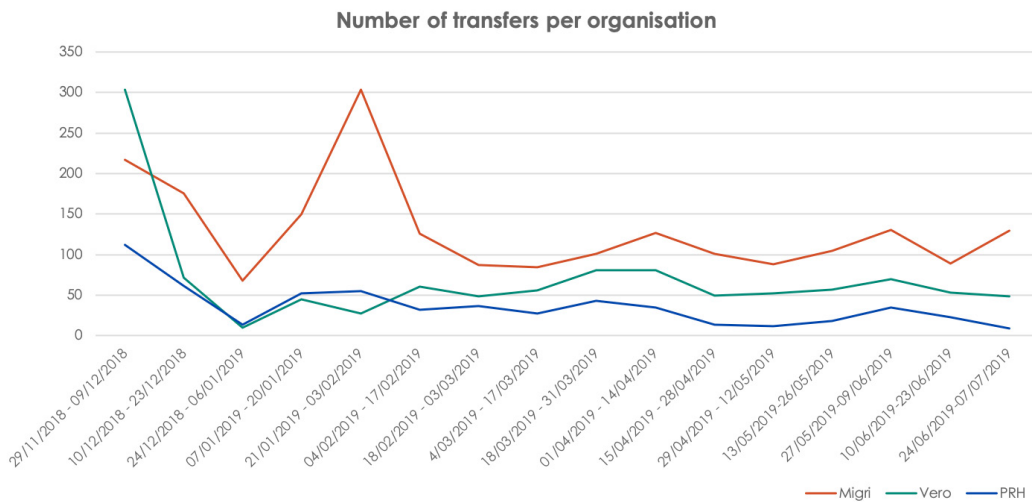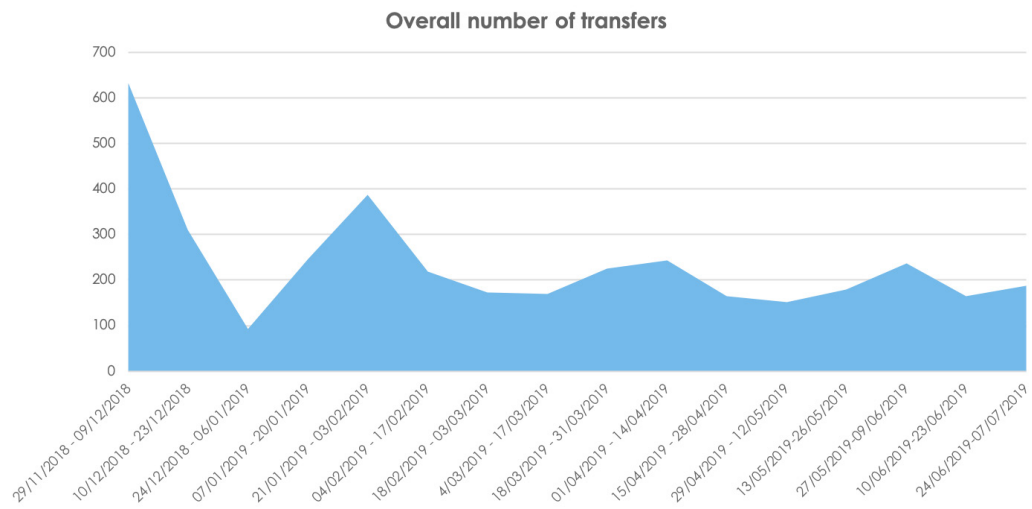
**Overall number of conversations**



**Number of conversations per organisation**



Migri — Vero — PRH
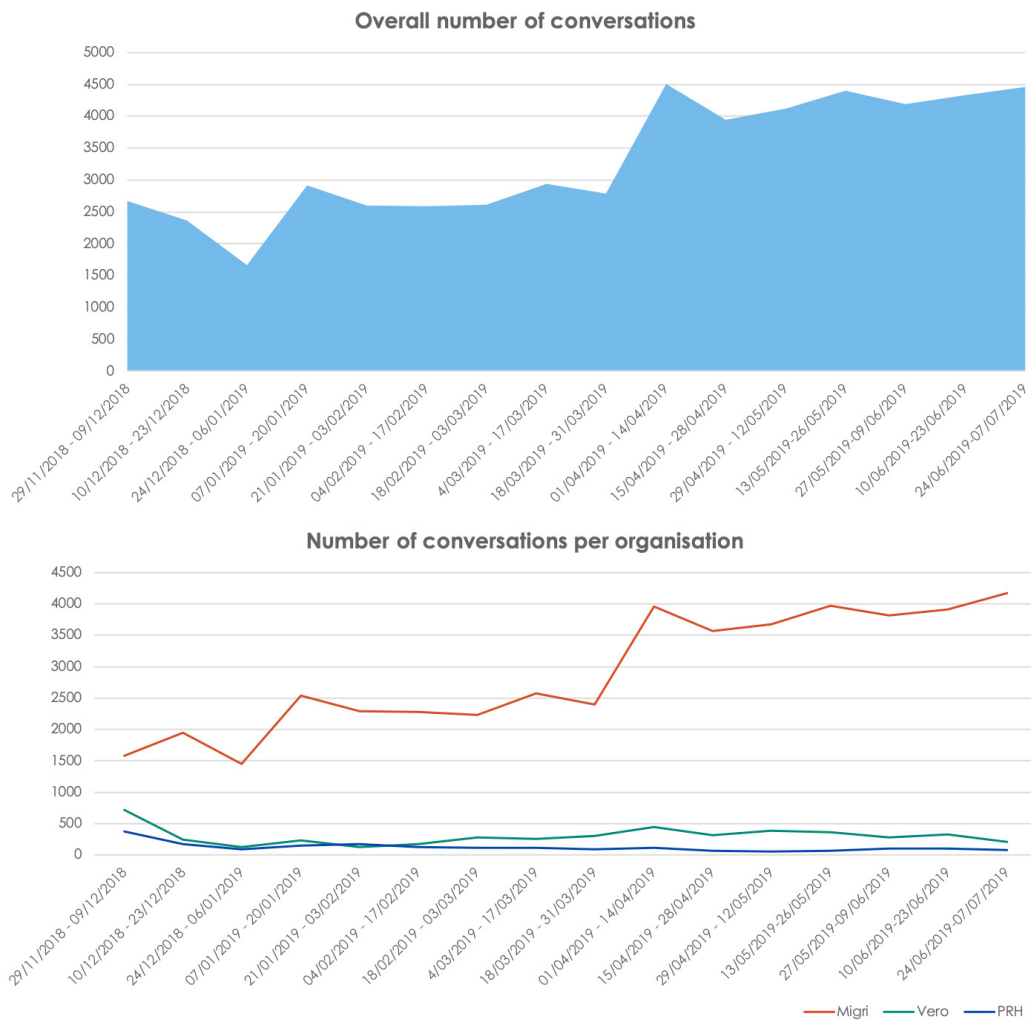
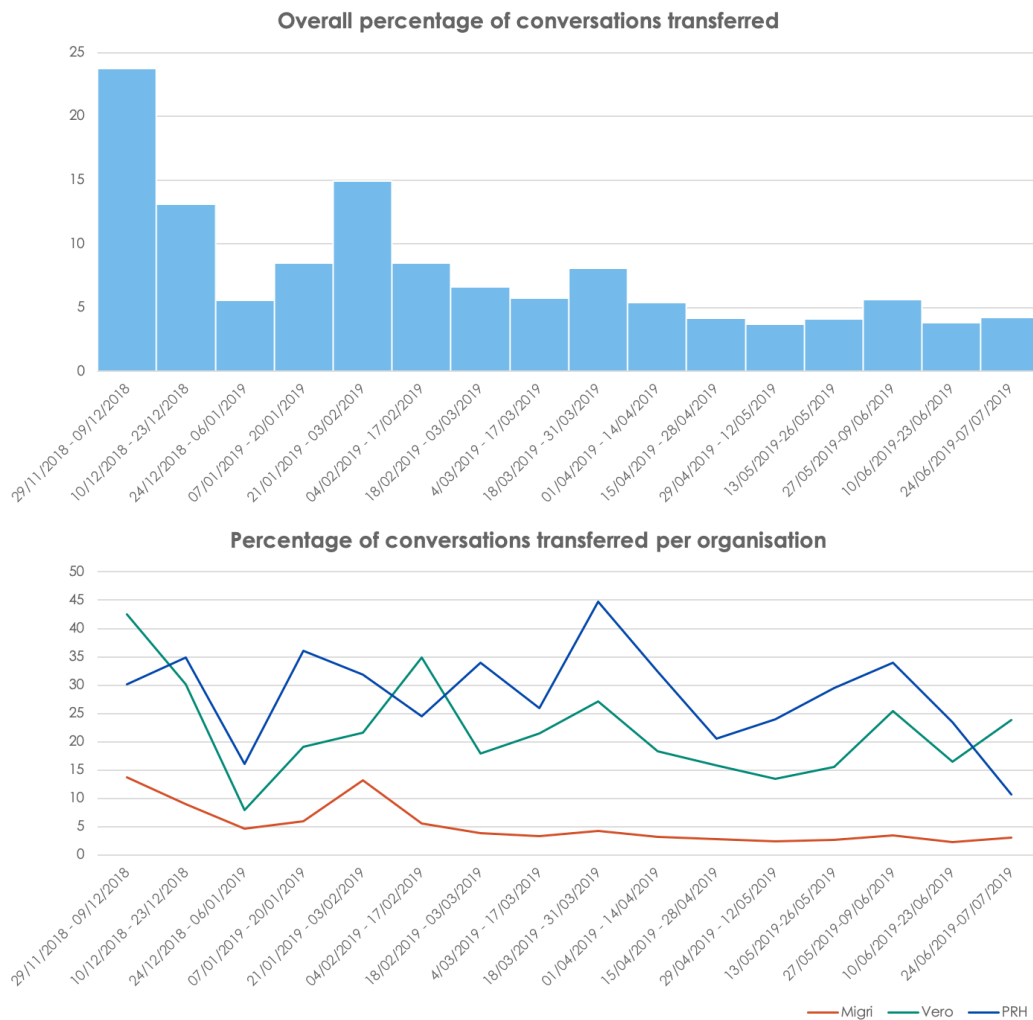# Transfers between organisations

As pointed out earlier in this document, transfers refer to users switching between one bot and another.

During the evaluation period **3151 transfer suggestions** from one chatbot to another have been made. We have to acknowledge that there might be less transfers: With current technology we cannot track if a user clicked yes or no to a transfer suggestion (only manual checks). However, from user testing sessions and manual checks of a decent amount of conversation logs, we conclude that users usually accept the suggestion to be transferred to another organisation.

We see two abnormal spikes in the number of transfers. The first is in the very beginning of the pilot period, when the team tested that the chatbot network works quite extensively. We assume that this influenced the numbers heavily. The second spike is in January 2019, when Kamu had an increase in spam conversations for two days. Since those spam questions were random, Kamu could not answer. The chatbot network technology tried to predict if another bot could answer better and thus suggested more transfers.

## Overall number of transfers



## Number of transfers per organisation



Migri — Vero — PRH

## Types of transfers



reactive — proactive — manual

When we look at the types of switches between the bots, we see that the **most popular transfer is reactive** (72%). Even though we do not have data to compare this result, it is what we expected: Most users do not intently switch between the chatbots, they just ask their specific questions and are then happy to be answered by whichever bot is in charge of the topic. We see the main hypothesis of the use of the chatbot network validated trough these statistics. Secondly, also **proactive transfers** are used when the users encounter them within the conversations (12% of all transfers). This highlights the

**Overall percentage of conversations transferred**



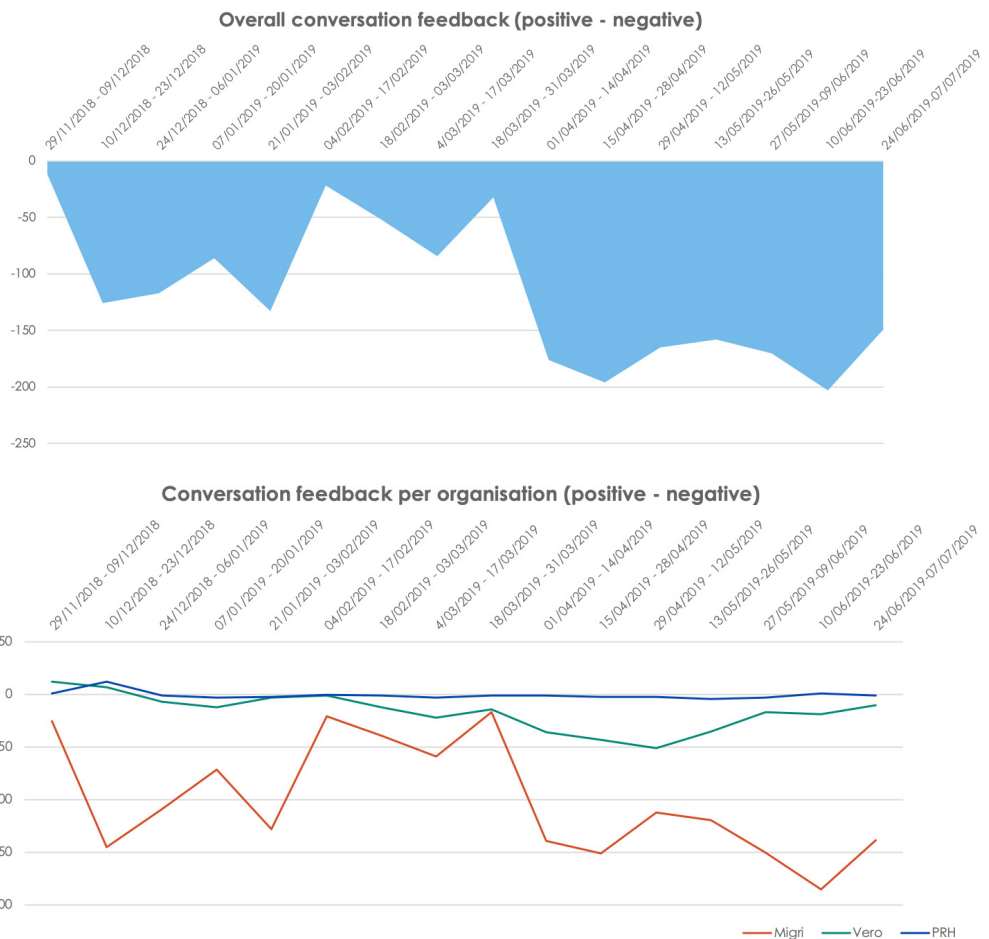**Percentage of conversations transferred per organisation**



Migri — Vero — PRH

importance of proactive services, which we see becoming more and more important in the next years.

From the graph *Overall percentage of conversations transferred* we see that the overall number of transfers generally stays about the same over time even though the absolute number of conversations grows. The percentage of transfers is also much more stable with Kamu, compared to the other two bots. This shows the percentage of conversations transferred depends on the broadness of the content covered by each organisation and is therefore hard to compare between organisations.
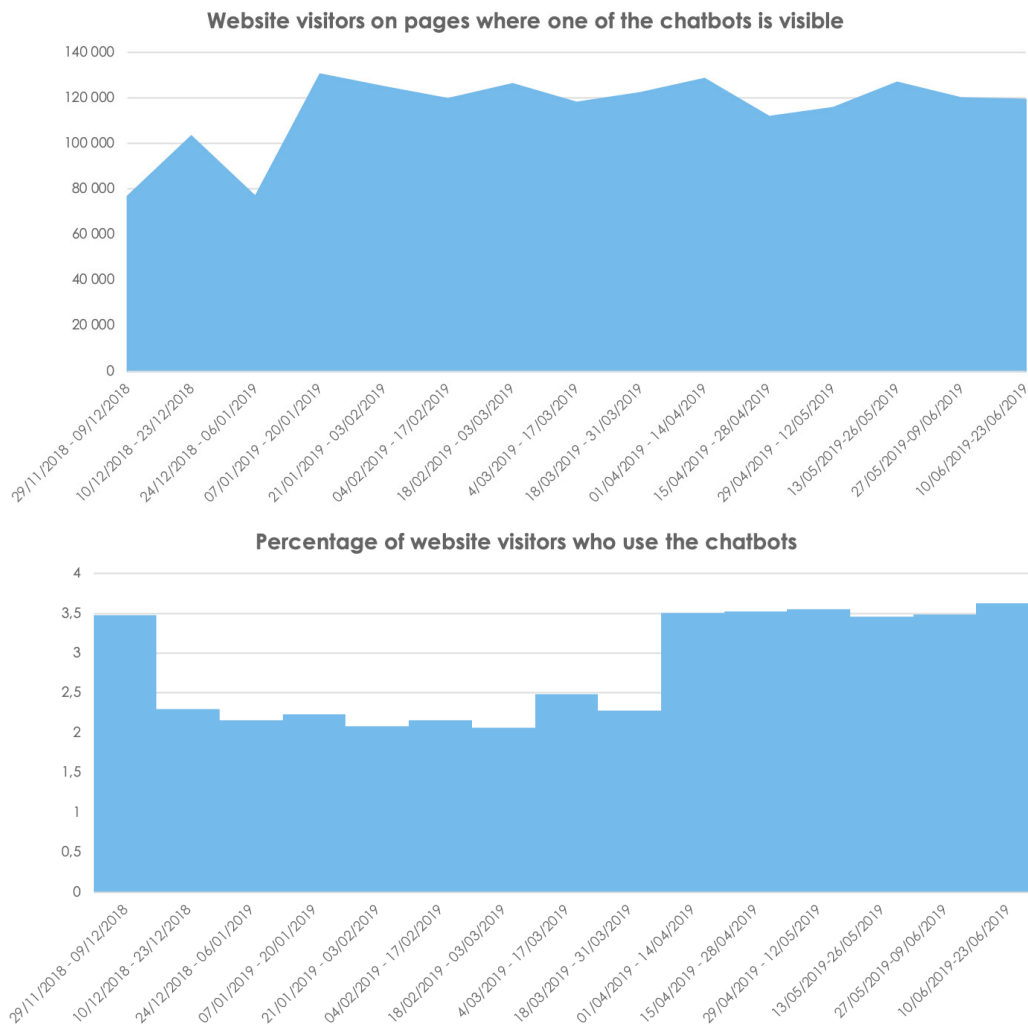
## Conversation feedback

Only about **15% of all chatbot conversations have received feedback** in the evaluation period. Feedback can be either thumbs up or thumbs down. There is also a text field for feedback, but we see it used very rarely by our users.
It is worth pointing out that users with negative experiences are more likely to give feedback than those with a good experience (so-called negativity bias, read more on Wikipedia). This also

**Overall conversation feedback (positive - negative)**



**Conversation feedback per organisation (positive - negative)**



— Migri — Vero — PRH

shows in our numbers: Overall the conversation feedback tends to be below 0. In a two-week period, we tend to receive 118 times more negative feedback than positive one. Given that in a two week-period the chatbots have on average 3360 conversations and remembering the negativity bias, this seems to be a quite good number.

## Users who use chatbots on our websites

One important indicator, we follow to see how users accept the chatbots, is how many users use websites where the chatbots are visible compared to those actually starting a conversation with the chatbots. Overall about **1.8 Mio visitors have opened pages where Kamu, VeroBot and PatRek are visible** in the lower right corner. We see an increase in the number of visits to those pages when visibility was added to a higher-level page of vero.fi in the second half of January 2019. On average, **2,9% of the visitors start a conversation with at least one of the three chatbots** (meaning they write at least one message to it). We also see from the graph below that this percentage has increased over time, mostly fuelled by the increasing use of Kamu.

**Website visitors on pages where one of the chatbots is visible**



**Percentage of website visitors who use the chatbots**



## Starting up Smoothly website

The Starting up Smoothly project website has been online already before the launch of the pilot. Nevertheless, the statistics start only together with the pilot period.

All in all, **2837 users have visited startingupsmoothly.fi** since this time. This gives an average of 12 users per day. 60% of its visitors come from Finland, which shows that even though the service is targeting foreign entrepreneurs before they arrive in Finland, the real user group is more Finnish-based. The experiment has become quite well-known across the Finnish government, where many presentations in different events were held. Secondly, no marketing efforts of startingupsmoothly.fi were made, except for mentions in blog posts and the presentations. The 40% foreign visitors come mostly from the United States (239 visits), Belgium (50), China (49), the United Kingdom (43) and India (39).

# Evaluating the experiment

After documenting and analysing the material we have produced about the Starting up Smoothly experiment, it is time to get back to the research questions and answer them one by one:

## Can we serve customers through a common channel?

The simple answer to this question is yes. As stated in the beginning not all questions have been worded the best possible way in the beginning. I would rephrase this question into: *How do customers accept a common chatbot channel of three different public organisations?*

The qualitative data from the user tests has shown that customers are delighted to see one chatbot that has information from three public agencies. They also accept the chatbots easily and see them as a current state-of-the-art service delivery model.

Looking from a quantitative perspective we must acknowledge that the Starting up Smoothly service has not had as many users as we would have hoped. This is due to many factors, one of them being the temporary nature of the experiment, which stopped us from doing more marketing. Secondly, the very limited content scope also hindered the user experience. We came to the conclusion that the service itself is not yet useful enough for a bigger audience. In order to get more users we would need to build more content and probably also involve more organisations in the experiment.

Nevertheless, we have seen a big national as well as international interest in the Starting up Smoothly experiment. Most of this interest does not stem from technology-enthusiasts but from people who care about good public service delivery. In this sense, we think that the Starting up Smoothly experiment was successful and proved that the idea of serving customers of different organisations through a joint chatbot channel has further potential.

## Should the customers be aware of organisational silos?

Regarding this question, we openly share that we have started the experiment with the assumption that customers need to be aware of the organisational silos. For this reason, we chose to implement the chatbot network in a way that customers see three different chatbots (three avatars) and need to confirm that they want to switch from one to the other. We believe that the strong distinction between three chatbots is

needed in order for customers not to get confused about the other service channels that our organisations offer. We do not want them to get frustrated because they search the wrong website for information, or they even visit the wrong service point to get advice.

We acknowledge that during the two phases of Starting up Smoothly we have not experimented with any other way than three distinct chatbots and we still think that this is the way to go forward.

## How can we collaborate across organisational silos, budgets and resources?

With respect to this question we do not claim to have reached the one truth, but we can share the way we have collaborated and what we think is important for other similar future collaboration projects:

### Customer-centred mindset: Working towards a common goal

First and foremost, collaboration across organisational silos relies on a customer-centred mindset. During the course of this project we noticed that this means many different things to all of us, and one of the achievements of this project has been to direct the different customer-centred mindsets into one common direction.

### Openness to try things out

In order to collaborate across organisational boundaries, team members as well as their managers need to be open to try things out. Providing a service from three organisations that have not worked together before, demands an extend of openness to new collaborators, ways of working, goals and so on. Only by working in an open way and by everyone involved opening up to new points of view, such collaboration can succeed. This point also relates to resources: Only when managers are open to try out new things, they will agree to give enough resource to experimental cross-organisational projects.

### Common place to work

On a more definite level, having a common physical place to work was key to the project's success. It was surprisingly difficult for us to get, since each organisation had their own spaces with security restrictions of its own. But in the end, we managed to get all team members free access (with their own keys) to a common project room, where we could also leave our work in progress hanging on the walls.

A common place to work includes also common digital tools. Here again, we experimented, using Microsoft Teams as our main online communication and planning tool. It worked well

for us and most team members will agree that it was essential to have one secure way of working for all of us.

*Building a collaborative team together*

Being one team, we see as one of the success factors of this project. Of course, certain things are only understood by a certain organisation's team members. We did not teach everyone everything about the other organisation, but we built common working practices, which were shared between all three organisations. For us, it was important that we developed these working practices collaboratively. One of us usually made the suggestion about how to work, and in a discussion, we then developed these ideas further and agreed on final methods and ways of working. Often the ideas came from Migri's side, since we had most experience in developing chatbots and were essentially coordinating the work.

*Clear leadership & plans*

Even though this was a very collaborative experiment, we still had a clear leadership who set up high-level goals for the project. Based on this, we co-created the plans with the team (or different parts of it). We think a clear and committed leadership enables cross-organisational collaboration.

*Separate budgets by design*

In this experimental phase of building a chatbot network, the budgets we not shared but provided mostly by one organisation. However, the idea of the chatbot network is that ones the networked brain is in place, each organisation could choose their own chatbot provider and make their own procurement. By separating the budgets through architectural design decisions, the organisations would not need to share monetary resources as much. We acknowledge that this is still a dream to come true, but we believe that it is entirely possible.

## How to take another organisation on board in a chatbot network?

In the section <u>Onboarding a new organisation</u> we have shown how we have taken a new organisation onboard for the Starting up Smoothly experiment. We started from the assumption that PRH knew nothing about how to design chatbots. Obviously, they could have gained the knowledge by themselves, but it would have taken them longer to get on track. We believe that in a collaborative project, the partner with more knowledge should help the others to gain speed as quickly as possible.
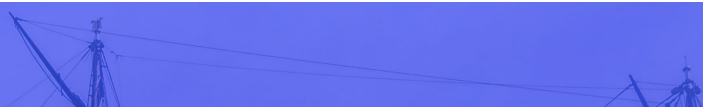
We onboarded PRH in four phases:
**Phase 1:** Initiate the collaboration
**Phase 2:** Starting the collaboration
**Phase 3:** Defining & sharing team working practices
**Phase 4:** Defining the new chatbot

We do not claim that this is the only way to onboard a new organisation to a chatbot network and next time we would pay more attention to understanding the development culture of a new organisation as well as understand the backgrounds of the team members. By doing this, some of the confusions that arose could be avoided.

## Final words

The Starting up Smoothly experiment has proven that the **concept of independent but interconnected chatbots has big potential to meet the user expectations of public services**. Users want all services in one place and a network of chatbots is an efficient way to connect government services while keeping responsibility areas and budgets separate for each organisation.

The Starting up Smoothly experiment has also shown that three government agencies, who have never worked together, can **develop an entirely new digital service from scratch to a public pilot within just nine months**. We believe that the experiment was very agile, always adapting to new needs and restrictions.

> **Friends, we are up and running together at least until December 2019!**

**Kamu**      **VeroBot**      **PatRek**

> **...and then?**

> **Who knows?**
> **How about more robo-friends?**

We're robo-friends from an entirely new experiment:
Starting up Smoothly

**Kamu**

**VeroBot**

**PatRek**