FAST

FAST tracking e-government deployment

There is a global push towards e-government – where public services are delivered through digital channels such as the internet or smartphones. Countries around the world are implementing ambitious plans. However, many European governments at different levels are lagging behind their own goals and plans. Implementing e-government applications covering different levels of government is a slow and painful process. Converting ever-changing legislation into user-centric applications is often being done manually, with a lot work being duplicated by different local governments.

In the meantime, the European Commission is also pushing for a Single Digital Gateway (SDG) between European Union (EU) members, with 2018 regulation setting implementation deadlines for the end of 2020 and 2023. And the spread of COVID-19 has caused major disruption to public and private life, restricting face-to-face interactions and putting tremendous pressure on government bodies to move services online.

The FAST project set out to develop an ambitious new technological solution to dramatically speed up the implementation of user-centric e-government applications in Europe that will improve the user experience (UX) for citizens interacting with public services. We do this by developing an automation process to generate e-government interfaces for those public departments that are least equipped to deal with administrative fragmentation, following a three-step process:

1. Converting public department websites into structured and optimized workflows
2. Using those workflows to automatically generate user interfaces (UI)
3. Monitoring users and pre-selecting the most suitable UI elements and paths via an automated measuring and feedback mechanism

THE OUTCOMES

1. OSLO-STEPS open standard and editor

In close collaboration with the Flemish government (Agentschap Informatie Vlaanderen), the project created a new open standard, called OSLO-STEPS, for describing multi-step government processes in a structured way. A user-friendly editor allows government agencies to visually create, update and maintain OSLO-STEPS based processes with less effort.

2. Dutch NLP tools

The FAST project also developed various Dutch Natural Language Processing (NLP) tools to support government agencies in creating OSLO-STEP processes. These tools can extract relevant word- and sentence-level information from existing unstructured content such as government web pages, PDF files and webforms. This allows computers to process, analyze and reason on information in large (Dutch) texts.

3. Integrated demonstrator

To show how the different components of the solution could work together to reach ambitious project goals, the project created an integrated demonstrator. This demonstrator can:

- Use NLP to detect and understand government procedures from unstructured content
- Create different possible end-user paths through the procedure, using multi armed bandit technology to find the best performing paths
- Automatically generate a UI (webform, chatbot or conversational agent) for the procedure

- Continuously optimize the process using complex multivariate testing based on actual user behavior, fed back into previous steps

It showed that it is possible to generate suitable UIs from large unstructured text semi-automatically, greatly reducing the manual work required to set up a new e-government app.

NEXT STEPS

Together with Vlerick, the project developed a business plan for a joint venture to commercialize the FAST project outcomes based on an open-source model. Numerous project partners are preparing to launch this venture in Q2 2021.

Furthermore, the FAST NLP tools form a solid starting point to handle the ever-growing demand for automatic extraction of machine interpretable information from text. Various follow-up projects are planned to apply and extend the capabilities of the FAST NLP tools.

Initially, these include NLP for the financial domain (in collaboration with the EU department for financial stability and capital markets) and for the medical domain. In the longer term, the NLP tools will be integrated with our text-to-speech system to allow, for example, the extraction of personality traits from text and speech.

FACTS

NAME	**FAST**
OBJECTIVE	Accelerate the implementation of user-centric e-government applications
TECHNOLOGIES USED	The Semantic Web (RDF, N3), Linked Open Data, Web Components, Natural Language Processing, Deep learning, multi-armed bandit algorithms
TYPE	imec.icon project
DURATION	01/05/2018 – 30/04/2020
PROJECT LEAD	Sander Goossens, Endare
RESEARCH LEAD	Kris Demuynck, UGent
BUDGET	1,573,703 euro
PROJECT PARTNERS	CrossLang, Endare, Internet Architects, Ideabox, Informatie Vlaanderen, Vlerick
RESEARCH GROUPS	imec - IDLab Data Science Lab - UGent

FAST project partners:

WHAT IS AN
IMEC.ICON PROJECT?

The imec.icon research program equals demand-driven, cooperative research. The driving force behind imec.icon projects are multidisciplinary teams of imec researchers, industry partners and/or social-profit organizations. Together, they lay the foundation of digital solutions which find their way into the product portfolios of the participating partners.

The FAST project was co-funded by imec, with project support from Agentschap Innoveren & Ondernemen.

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