In 2014, our online banking customers experienced outages on 142 days of the year. Our customers experienced larger scale outages every two weeks.

Since 2014 our outages have appeared in the news at least once, often multiple times, a year.
Introductions

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ING is a global financial service provider servicing more than 35 million customers. In the Netherlands we are the banking sector market leader with over 8 million retail customers.
Mobile Banking used by 3 million customers who all combined logged in to the app over 1 billion times in 2016.

Internet Banking used by 6.1 million customers who jointly log in 1.4 million times a day.

17400 machines are spread over 2 data centers and use 14 PB of storage.
Why do we need to improve the reliability of our services?

AVAILABILITY REPORT OF JULY 2017

<table>
<thead>
<tr>
<th>Service</th>
<th>Availability</th>
<th>Change</th>
<th>Incident</th>
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Site Reliability Engineering (SRE) is what happens when you ask a software engineer to design an operations team

Site Reliability Engineering, as pioneered by Google, is doing work historically done by operations teams but using engineers who aim is to automate the toil within their organization. **SRE seeks to improve the reliability of an organization’s services while minimizing the manual labor intensive work needed in operations.**

By design, it is crucial that SRE teams are focused on engineering. There is a 50% cap on operational work (tickets, on-call, manual tasks) and **at least 50% of SRE time should be spent on engineering.**
Why do we consider SRE as the key to improving reliability at ING?

**Future of banks is not as we know them today**

Technology, changing customer behavior, new competition and regulation are driving a transformation in the banking industry. Customers expect a real-time digital banking experience that’s available 24/7.

**To match customer expectations, we work in end-to-end Agile BizDevOps squads**

Teams are autonomous, there are fewer handovers and there’s a different take on management.

**We celebrate an engineering culture where we solve problems with IT**

Over the years IT has become more important within ING. We are building an engineering culture where there’s room and time for automation, innovation, autonomy and a lot of engineering. To improve our reliability we needed an approach that fits with these ideals: SRE seems to be the answer.
Within the Domestic Bank, we have adopted the Spotify model and we work in Tribes composed of BizDevOps squads who are responsible for build and run: our SRE team is positioned centrally within the Domestic Bank (Retail NL) as an isolated silo.
Within ING we have a number of challenges related to our reliability that we want to solve through SRE

- Our centralized monitoring solutions sometimes encounter scalability and availability issues.
- Teams are not in control of monitoring solutions and cannot fix it when broken.

- Our centralized alerting solution is unreliable and does not send alerts directly to BizDevOps teams.
- It takes too long for an alert to reach the right team: on average we need 69 minutes before an engineer starts working an incident resolution.

- The same incidents occur multiple times and we do not follow up on incidents enough.
- We do not learn enough from mistakes made – we have yet to become a learning organization.

- In a global IT organization we need a way to collaborate during incident response.
- Engineers from different countries have difficulty communicating on shared platforms. Our way of working during major incidents is location-driven.

- Teams do not always measure availability from a white box monitoring perspective.
- Teams are not always aware of their services’ performance and cannot take full responsibility for run.
Our SRE team enables engineering teams through delivery of tooling, facilitation, consulting and education

- We educate others about SRE during demos and are working on developing training materials.
- We facilitate the creation of more SRE teams and ask them to join our SRE community meetings with the other NL-based SRE teams and our global online SRE community.
- We are not on call: BizDevOps teams are responsible for their own build and run.
- We facilitate BizDevOps squads during post mortems and consult whenever our help is needed in fixing or identifying reliability issues.
- We build tooling to enable BizDevOps squads. At the moment we focus on Prometheus and Mattermost (ChatOps).
We aim to reduce our time to repair through tooling by improving our monitoring with Prometheus and introducing ChatOps with MatterMost.

SRE takes care of provisioning machines, continuous delivery pipeline, maintaining binaries and generic configuration while taking away administrative toil from BizDevOps teams.
The purpose of our SRE team is clear, but how did we get there?

March 2016: End of Chain Management Internet team (engineering squad on call for all online channels): maybe SRE is the solution → pilot time

October - November 2016: Creation of roadmap and vision, new product owner, new chapter lead. Started work on Prometheus and doing postmortems.

June – August 2017: Spreading the word about SRE, creating more communication and training materials, figuring out how to scale and making Prometheus production ready.

September 2016: End of SRE pilot phase, transition of on call duties to BizDevOps, visit SRECon EMEA 16 as a team, senior management commitment in continuation.

February - April 2017: Started work on ChatOps, started local SRE guild for collaboration in NL, started global SRE collaboration workshops, expanded team with 1 SRE.

August – October 2017: Onboarding first teams on Prometheus with even more teams waiting, making our stack more stable, working on ChatOps on mobile phone.
Takeaways

People
- Never compromise on mindset in hiring SREs.
- Assign a PO to protect team focus on engineering and to spread the SRE love.
- Consider what mix works well for you in terms of new and existing hires: benefit of hiring internally is proof of mindset and respect with engineers.

Process
- Create a roadmap as a team.
- Learn from others through online resources, at conferences or company visits.
- Prepare to spend time on explaining and promoting SRE and your tooling.
- Beer o’clock is great for team bonding.

Technology
- Make it attractive for others to use your tooling: take away the pain for teams.
- Productization takes time, a lot of time. Don’t underestimate this.
- Even in a financial organization we can achieve the same as other tech companies: just with a different tool set and a bit more effort.
- Consider scalability and ownership in your tooling strategy.
Questions?