



Software Improvement Group



Rabobank

Groene software: meten is weten

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participants in the
Knowledge Network Green Software (#KNGS)

This presentation

- Introduction of Knowledge Network Green Software (KNGS) and Software Improvement Group (SIG)
- Rabobank's perspective on Green Software and the KNGS
- Summary of *Sustainable Application Scan* conducted by SIG on *Rabo Rekening Delen*
- General conclusions regarding Green Software

Software Improvement Group

Background

- Spin-off from CWI in 2000, self-owned, independent
- Strong academic background, innovative, award-winning, profitable
- Member of the consortium Green IT Amsterdam region



Activity

- Management advisory, fact-based
- Accredited software analysis lab employs analysis tools and models
- Experienced staff transforms analysis data into advice

Track record

- Finance, government, logistics, telecom, manufacturing, energy, ...
- We analyze over 100 systems annually

Knowledge Network Green Software

#KNGS

Mission

- Facilitate the creation and exchange of knowledge regarding green software

Mode of operation

- Matching demand and supply around green software innovation
- Workshops
- Mailing list
- Social networks (LinkedIn, Twitter, ...)
- Dissemination (Interview Telegraaf, survey results in AG, presentation at ICTDelta, ...)

Start group





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KNGS en introductie en groene software

ICTDelta 2011 Meindert Jebbink

Introduction Rabobank's perception of Green Software and KNGS



- What is Green Coding or Green Software?
 - Green coding or software is software, designed with energy efficiency as an extra non-functional constraint
 - Rabobank perceives Green coding as maybe the next step in the “greening” of the IT industry.
 - Focus on what’s driving the hardware and thus the datacenters, namely the application software
 - Joined in an early stage a small group of interested parties, which has now become known as the KNGS (Knowledge Network Green Software)

Involvement of the Rabobank Building and buying software



- Rabobank's application software is typically built with focus on reuse and building smaller units of code or we buy it as a software package.
- investigate making energy efficiency as a standard non functional design requirement, supported by standard "construction principles" for their developers (in house or offshored)
- The construction principles should be perceived as a non functional requirement to be incorporated in quality scans
- For buying software we would support developing an "EPA star" classification method.



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Sustainable application scan

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Sustainable Application Scan

- Identify opportunities for energy savings by review of architecture, coding, deployment
- Partners: Rabobank, AgentschapNL, SIG
- Application: *Rabo Rekening Delen* developed by Rabobank, Ordina, and Service2Media
- Example of knowledge generation and sharing within the KNGS

Rabo Rekening Delen

User perspective



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Step 1



Step 2

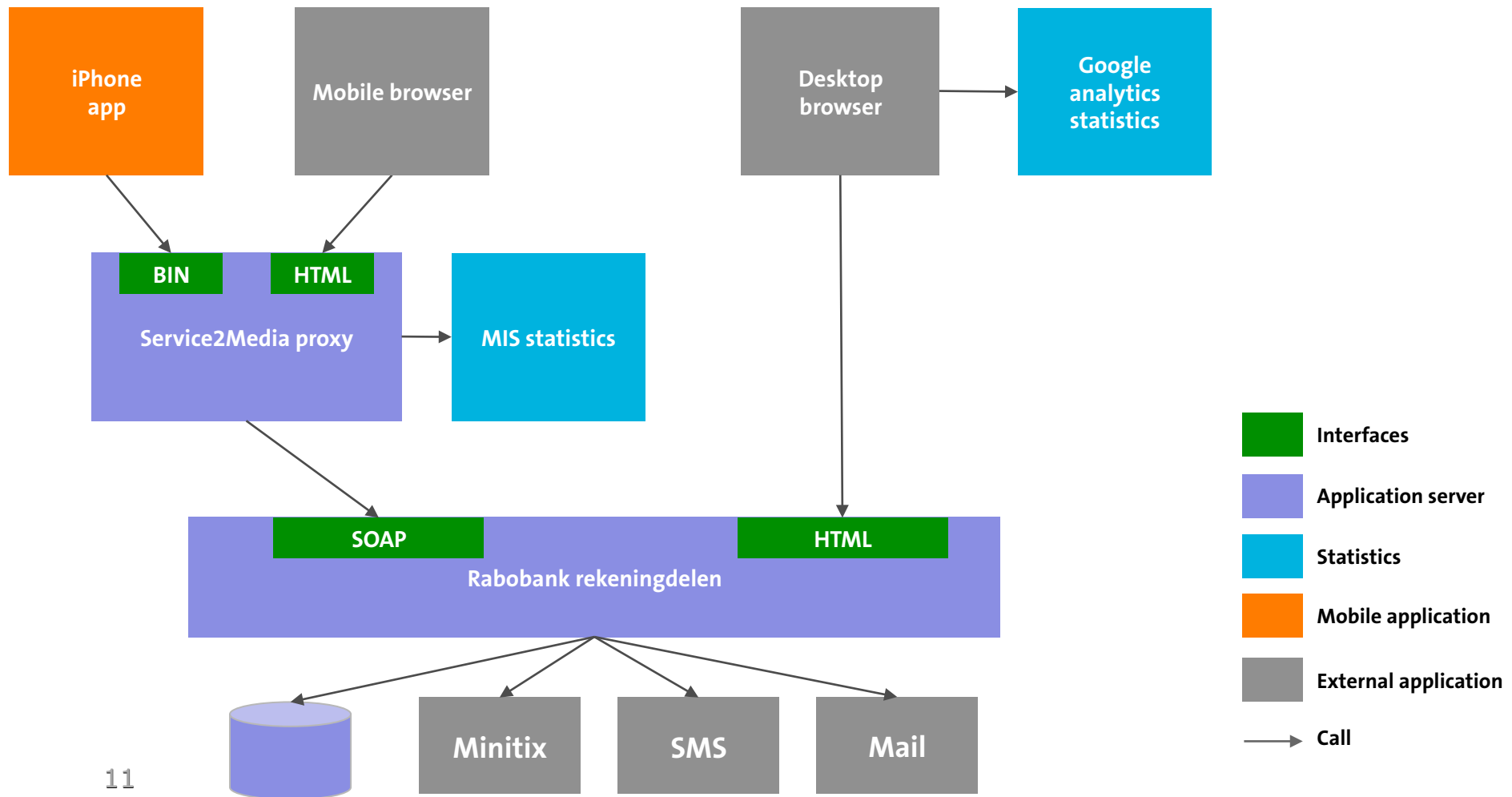


Step 3



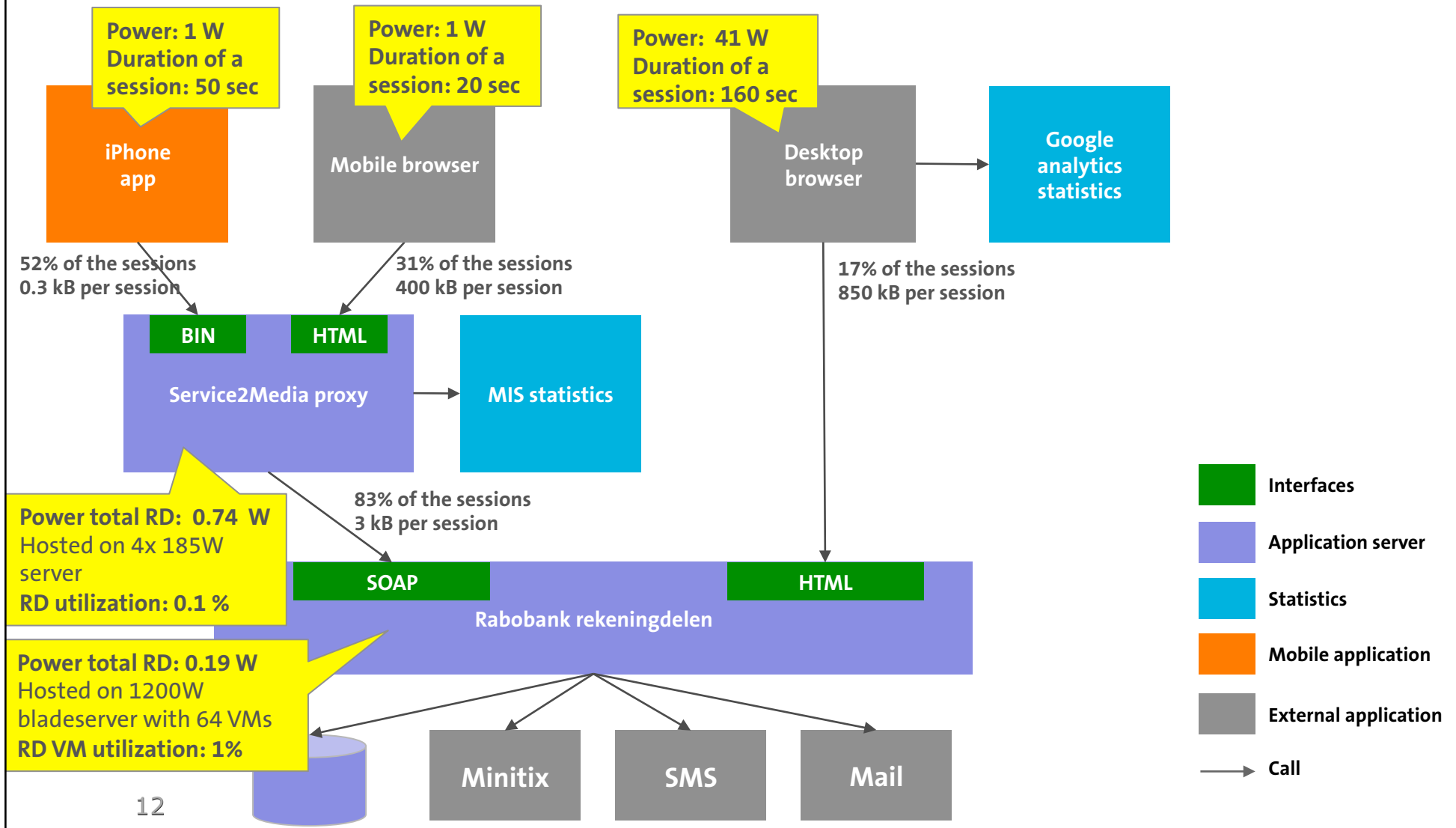
Rabo Rekening Delen

Engineering perspective



Rabo Rekening Delen

Consumption and usage



Rabo Rekening Delen

Scan results



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- No inefficiencies detected for current usage scenario
- Opportunities for saving energy in future scenarios
 - Removing proxy server to reduce data translation steps and communication volume may lead to **30% savings**
 - Reducing image size in mobile browser application may lead to **10% savings**
 - Eliminating some synchronization moments to reduce radio traffic may lead to **5% savings**



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Lessons learned

- Rabo Rekening Delen is a good reference project for building energy-efficiency into applications with uncertain usage profiles
- Development involving multiple components and respective organizations requires attention to inefficiency risks at boundaries
- Success factors for energy-efficiency:
 - Attention to details: small changes may lead to energy-leaks
 - Awareness throughout lifecycle: requirements, design, coding, deployment, exploitation
- KNGS fosters cooperation between multiple knowledge partners:
 - Host – Rabobank (and its vendors Ordina, and Service2Media) provided innovation environment
 - Fellow – SIG carried out the scan
 - Sponsor – AgentschapNL supports and promotes the innovation



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