



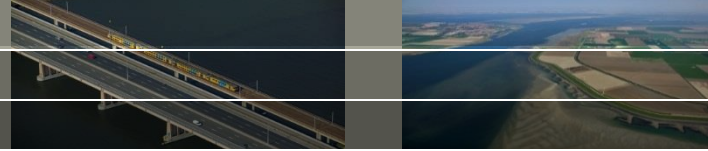
Delft-FEWS 2020 Development Roadmaps

Executive Summary & Plan of Approach

Delft-FEWS Product Management

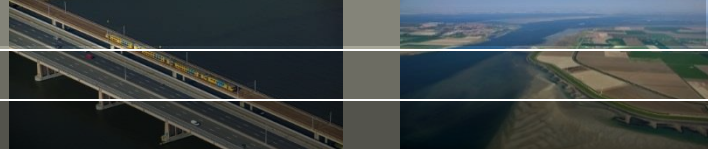


Regards from Delft...



- Thoughts with Nadine
- Privilege to present on her behalf
- Who is aware of the Community Strategy Board ?
 - NWS, BoM, FOEN, SEPA, RWS, NL-Waterboards
- The vision and roadmap I will present today has been tested with and influenced by the CSB

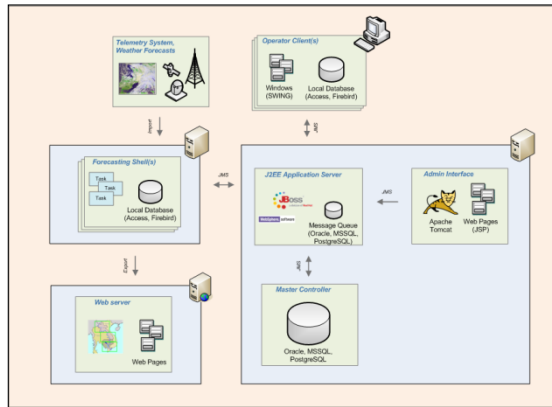
Overview...



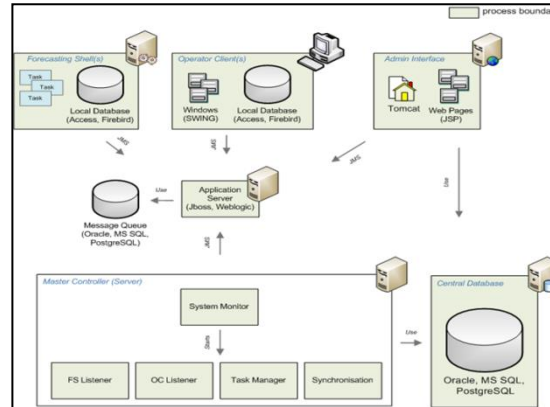
- Introduction and rationale
- Benefits for the Delft-FEWS User community
- Detail on the three roadmaps
- Implementation plan and timing
- Costs and financing
- Questions and discussion

Introduction and rationale

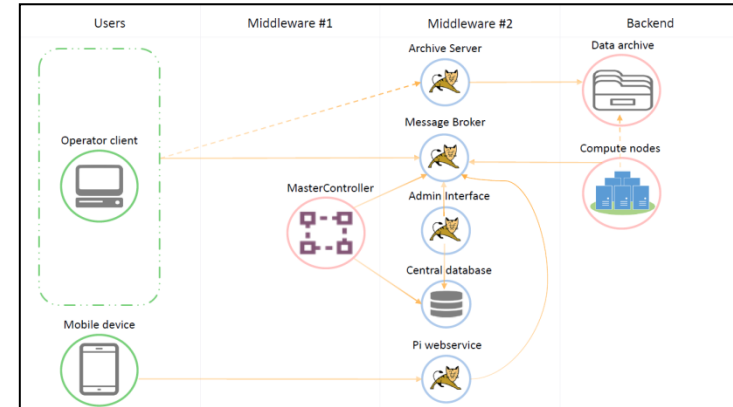
- Delft-FEWS Architecture: still based on initial design (2003-2004)
- Delft-FEWS developments focused on (front-end) functionality ($\pm 90\%$)



2004

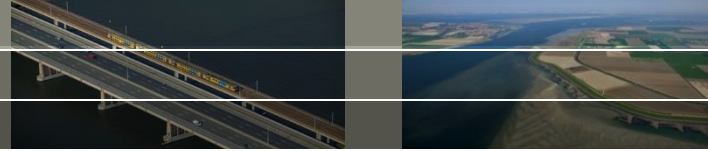


2009



now

The outside world changes...



- Many changes in IT and science since 2004
 - IT landscapes, solutions and security requirements
 - Data types, formats, resolution, quantity, storage
 - Hydrology, meteorology – distributed models, ensembles
- Deltares recognised a re-design was required for Delft-FEWS
- Discussions about a 2020 vision started at the 2015 International User Days in the Netherlands and continued with the Community Strategy Board
- From the Delft-FEWS 2020 vision: 3 roadmaps are proposed
 1. Backend Simplification and Automation
 2. Enhanced web services (PI Web Service)
 3. Seamless and open Archive

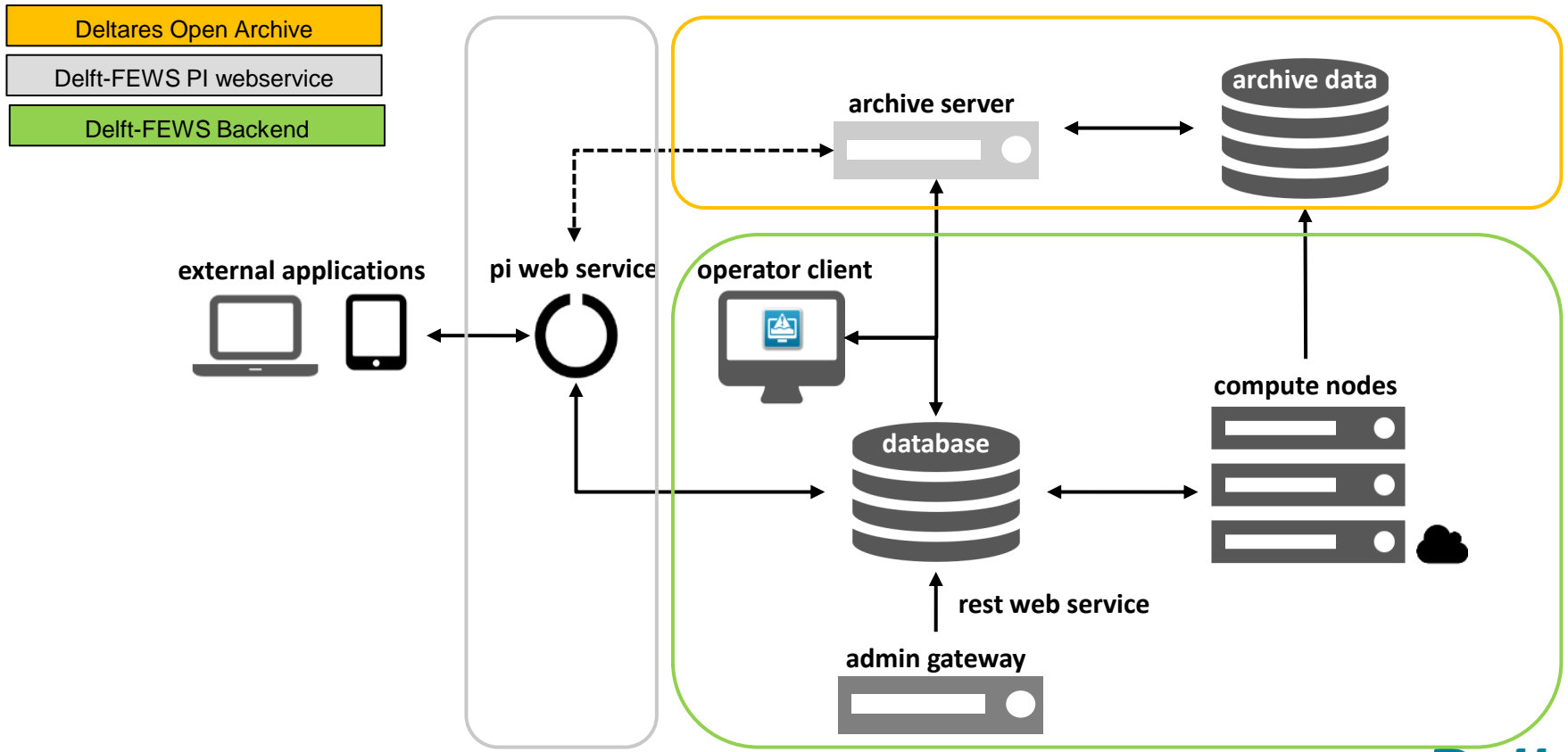


High level benefits for all Delft-FEWS Users...

- New and modern software architectures (with fewer components)
- Automatic roll-out of new software version and patches
- Automatic scaling computational nodes, enabling seamless use of the Cloud
- Improved performance, robustness and security
- Decrease in support and maintenance requirements

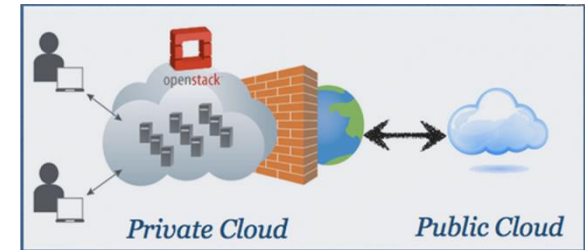


Roadmap 1: Backend - Architecture

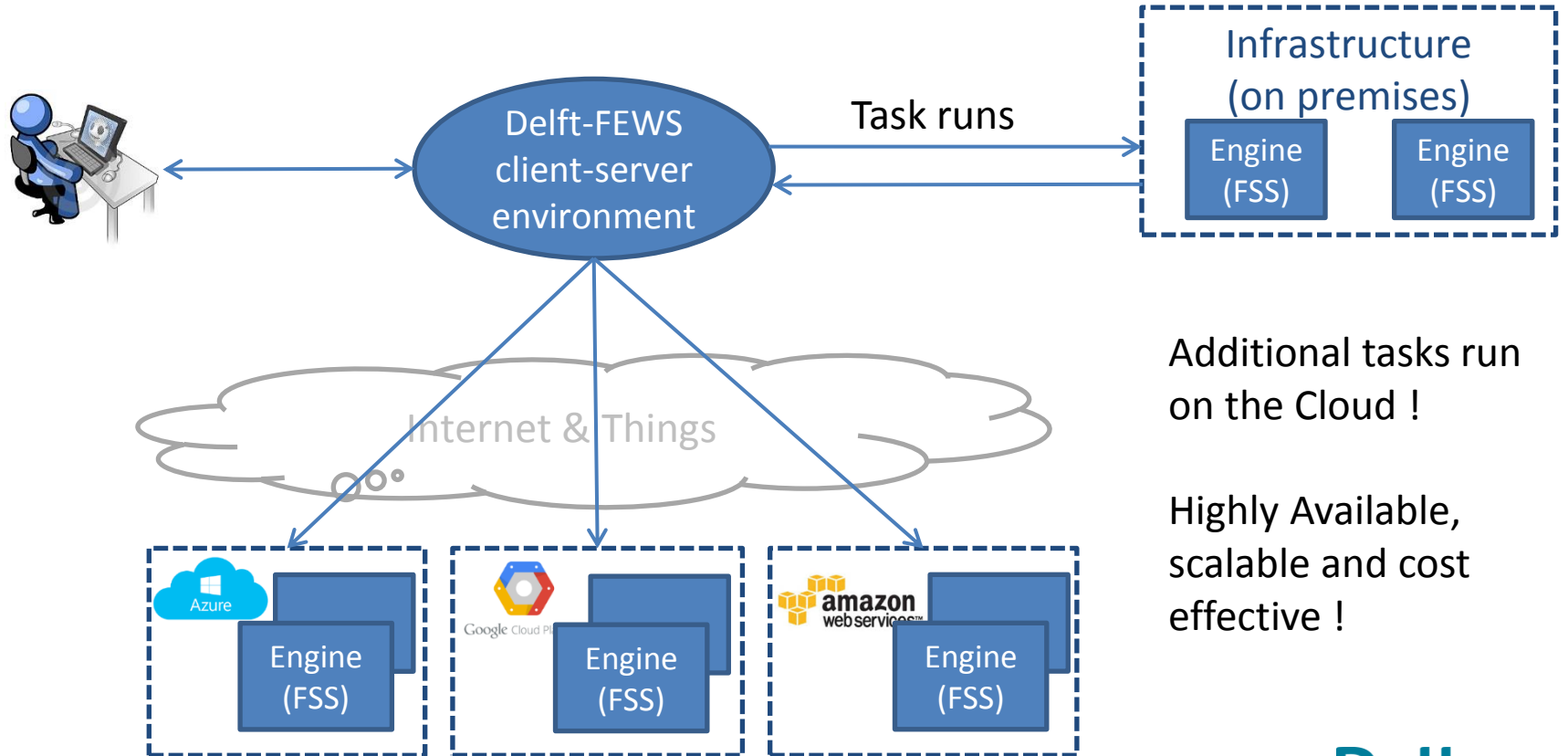


Roadmap 1: Backend - Benefits

- Simple and self-deploying Delft-FEWS client-server system
- Easier deployment of Delft-FEWS Operator Clients
- More efficient use of (virtual) hardware resources
- Lighter Delft-FEWS system (less components)
- Off-premises hosted Delft-FEWS (Cloud)
- Meet latest standards for security
- Automatic Documentation generation



Delft-FEWS: Hybrid task run management



Additional tasks run on the Cloud !

Highly Available, scalable and cost effective !

Roadmap 1: Backend - Developments



Simplification:

- Phasing out of Apache ActiveMQ / JBoss AS
- Phasing out of Delft-FEWS MasterController

High availability:

- High availability of the Delft-FEWS management components

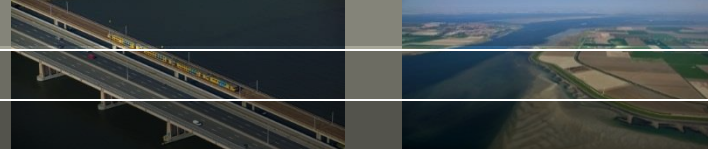
Automatic deployment

- Development of Delft-FEWS REST web service (REpresentational State Transfer)
- Development of Delft-FEWS orchestrator and new admin interface
- Simplified deployment of Delft-FEWS Operator Client and Forecast Shell Servers (FSS)

Other

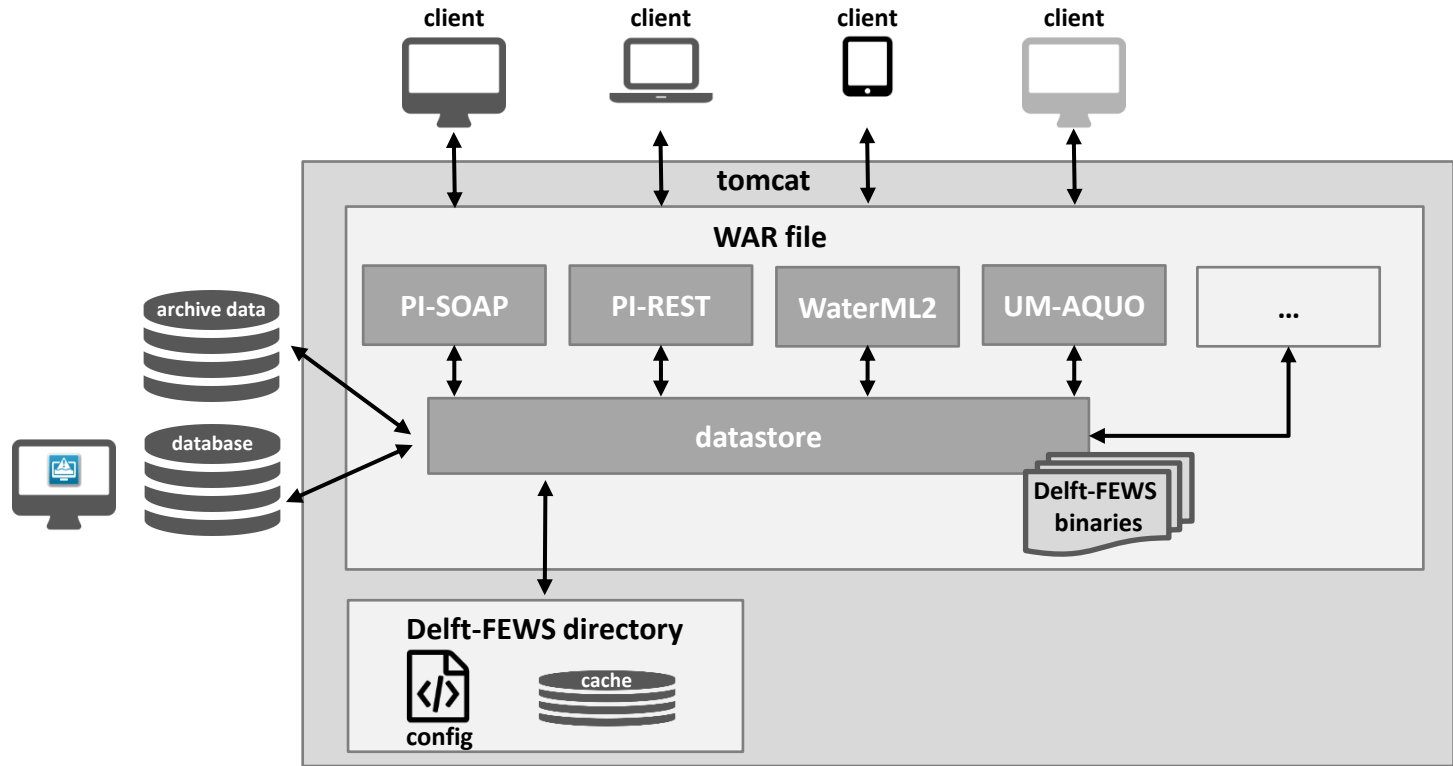
- Automated generation of system documentation
- Improving overall security within Delft-FEWS

Roadmap 1: Backend - Efforts



Development (group)	Efforts (k€)	Efforts (k\$AU)
Simplification	100 – 110	145 -160
High Availability	30 – 35	44 - 51
Automatic Deployment	135 – 190	196 - 276
Other	25 – 30	36 - 44
Total	290 – 365	420 - 530

Roadmap 2: PI web service- Architecture



Roadmap 2: PI web service- Benefits

- Simplification of installation procedure
- Easy enabling web service APIs (switching on one/more types)
- Support in modern data formats (e.g. XML, JSON)
- Extending existing PI format with gridded data
- Enabling Web Map Tile Service to retrieve and show gridded data in web applications

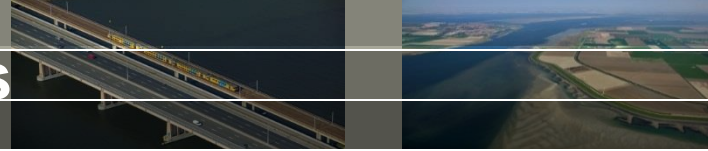


Roadmap 2: PI web service- Developments



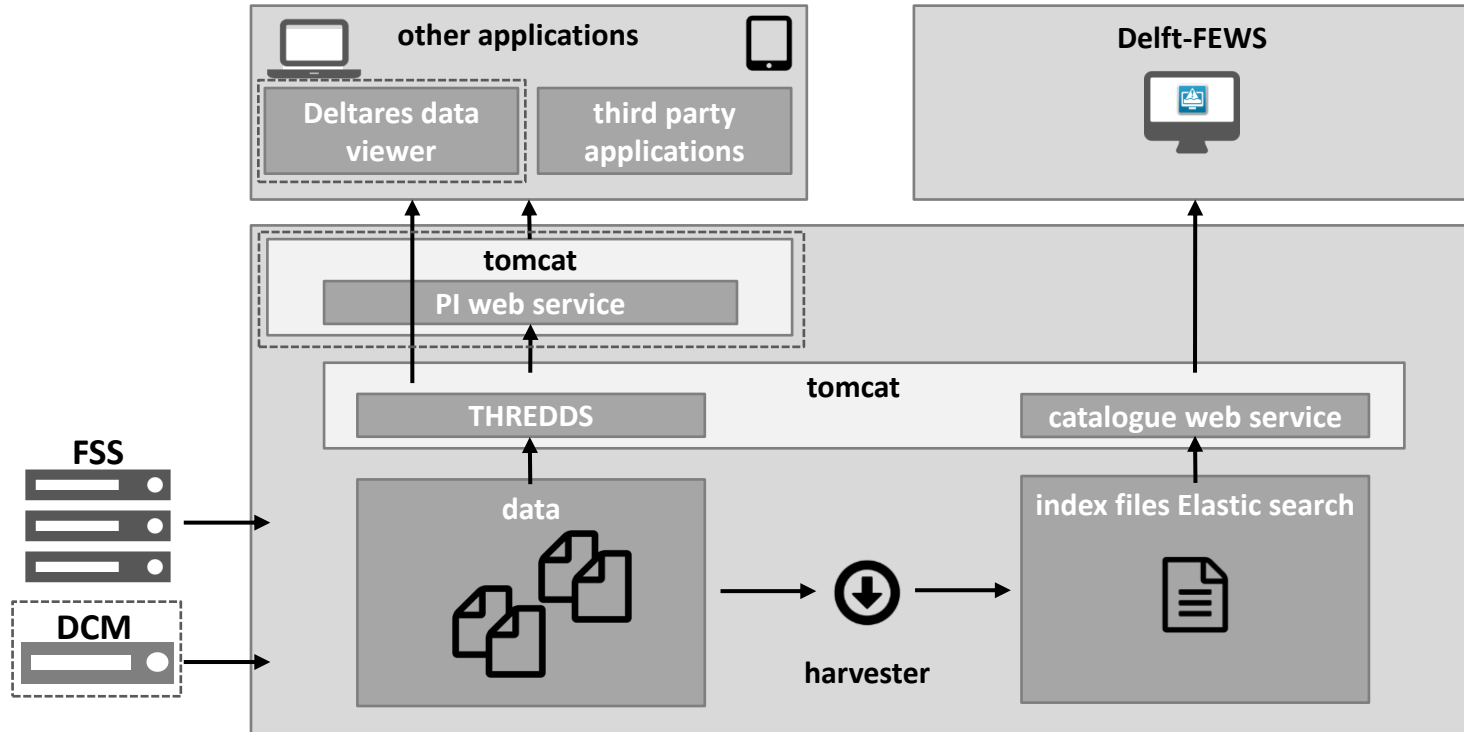
- Improve overall maintainability and testability of the web services
- Improve homogeneity between web service functionality
- Simplify the installation process, improve stability and performance
- Extend functionality of the web services and data exchange formats
- Enable secure transactions

Roadmap 2: PI web service- Efforts



Development (group)	Efforts (k€)	Efforts (k\$AU)
Maintainability/testability	15 - 20	22 - 29
Simplification/Install	15 - 20	22 - 29
Stability/Performance	10 - 15	15 - 22
Extend PI (grids) and JSON	40 - 50	58 - 73
WMTS	20 - 25	29 - 36
Total	100 – 130	145 - 189

Roadmap 3: Open Archive - Architecture



Roadmap 3: Open Archive - Benefits

- An open archive solution means accessible and searchable for other/public web applications
- Seamless data solution with Delft-FEWS for all time series data
- Reliable system and low maintenance costs
- Possibility to deploy the Open Archive as a stand-alone product for long term scientific data storage



Roadmap 3: Open Archive - Developments



Open Solution

- Secure accessibility and search-ability of data stored in the archive, also by external applications

System Administration

- Reliability and availability of the archive application

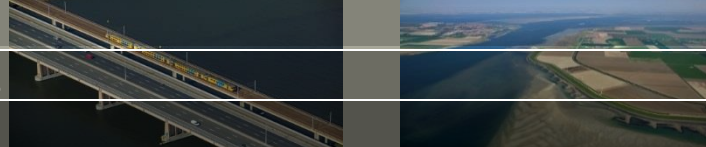
Further integration with Delft-FEWS

- Extend Open Archive/Seamless integration for forecasts and grids

Open Archive as stand-alone product

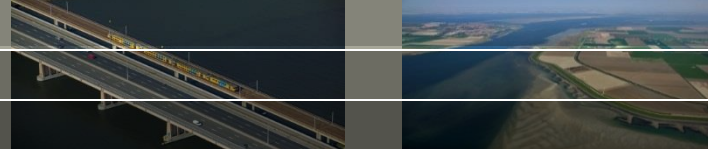
- Extending the open archive so it can be set up as a generic data storage application not exclusively for Delft-FEWS applications

Roadmap 3: Open Archive - Efforts



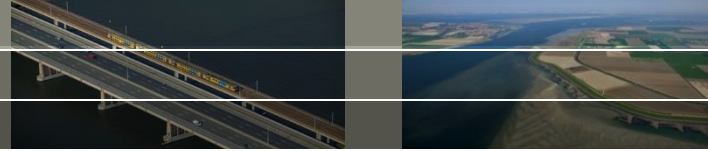
Development (group)	Efforts (k€)	Efforts (k\$AU)
Open Solution	45 - 50	65 - 73
System Administration	25 - 30	36 - 44
Integration with Delft-FEWS	45 - 55	65 - 80
Stand-alone archive solution	45 - 50	65 - 73
Total	160 – 185	232 - 268

Implementation plan...

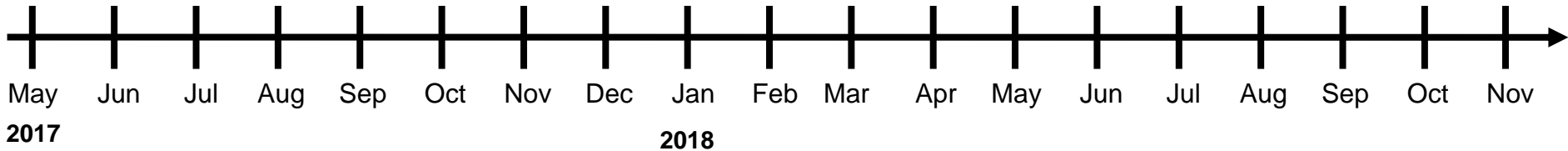
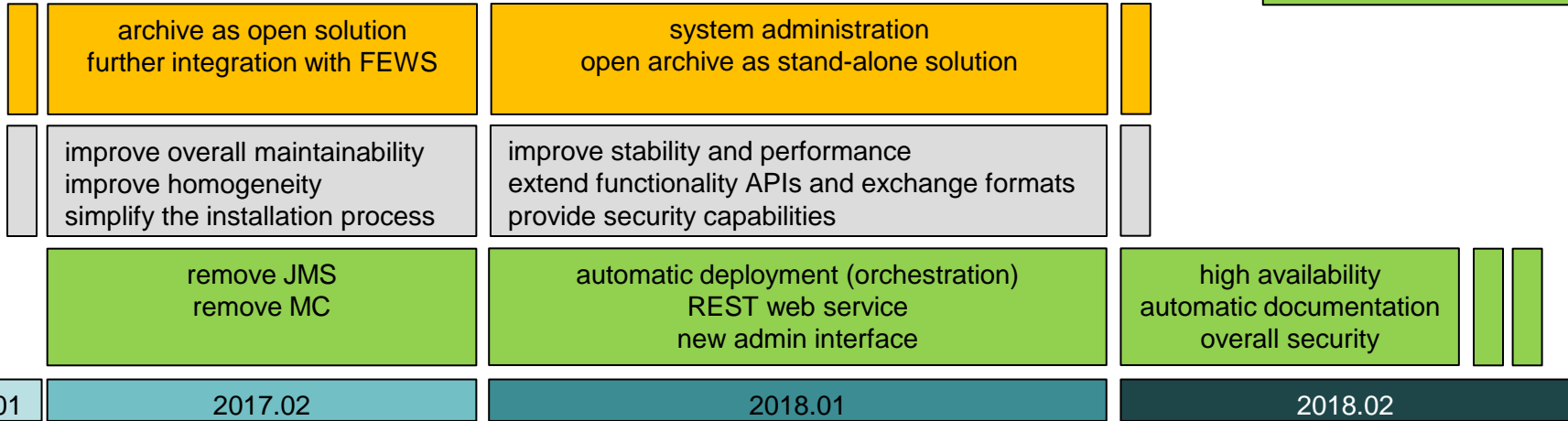


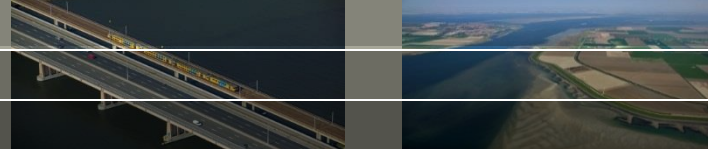
- High level:
 - Start: May/June 2017
 - Focus is on second half of 2017 and early 2018
 - Finishing in second half of 2018
- Development branches will be used for stepwise implementation of roadmap developments
- Functionality will come available in stable branches for smooth transition to existing systems using releases

Implementation plan...



- Deltares Open Archive
- Delft-FEWS PI webservice
- Delft-FEWS Backend

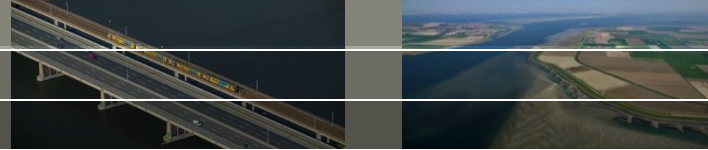




CSB reviewed at last meeting and advised Deltares to:

- use a **community funding model**
- involve **all clients** (large and small) for contributions
- be **transparent** in budget promises and progress
- arrange actual **payments per client** individually, taking into account:
 - Financial cycles
 - Regular Support and Maintenance contracts
 - Participation in / contributions to other new features

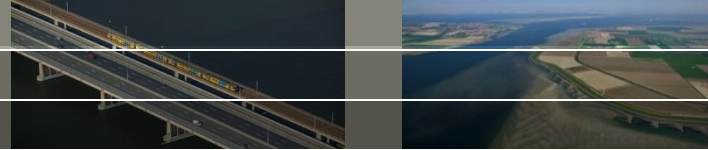
Costs & efforts...



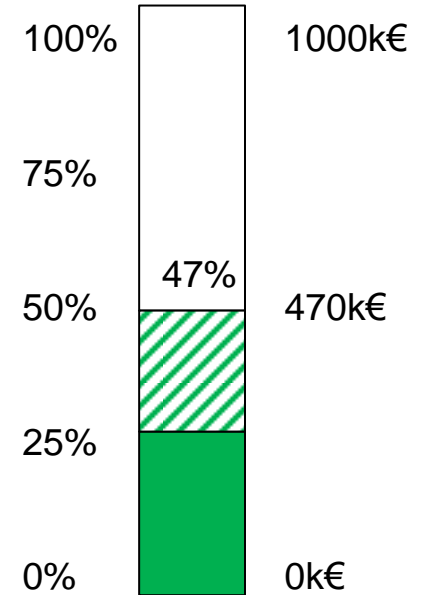
Development (group)	Efforts (k€)	Efforts (k\$AU)
Roadmap 1: Backend	290 – 365	420 - 530
Roadmap 2: PI webservice	100 – 130	145 - 189
Roadmap 3: Open Archive	160 – 185	232 - 268
Total*	550 – 680	798 - 986

including all preparations, project management, VAT (in NL: BTW) expected amount will be in the range of 750 k€ - 1 M€

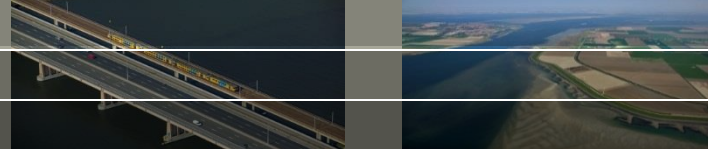
Finances: Results so far



Source	Contribute to Roadmap(s)	(k€)	Status
Rijkswaterstaat in the Netherlands (RWS)	Backend	50	guaranteed
Tennessee Valley Authority	Backend	70	intended
GO-FEWS (Dutch Waterboards)	all	150	intended
National Weather Service (US)			Under discussion (April 2017)
Australian/SE-Asia users			Under discussion today
UK, Swiss, AT, It, Germany			Not discussed yet
Deltares (internal, research, EU)	all	200	guaranteed
Total (Target is 1000 k€)		470	

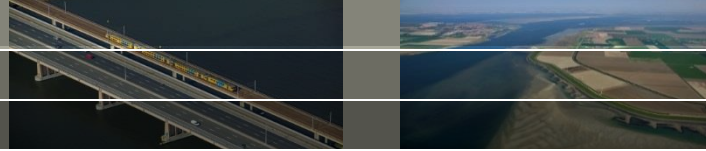


From a Bureau perspective ...



- We support all three roadmaps – all match our needs and strategic directions
 - Cloud, web services, mobile, seamless system integration, security, availability, easy deployment and releases
- We think we can contribute using our support contract
- It represents great value for money
- Good to see Deltares are also contributing to funding

Questions and discussion...



Thoughts on the use of a community funding model ?

Do you think your organisations could contribute ?

Does it fit with your agencies procurement rules ?

What can the Australian community target as a total contribution ?