Reuse: from theory to reality

Tomaž Speh (Statistical Office of the Republic of Slovenia) & Joni Karanka (ONS, United Kingdom)
Theory

• Reuse is poorly understood

• Not as simple as reusable / not reusable

• More than one dimension of reuse

• Many ways to reuse
Introducing CSPA
Reuse dimensions

Organisation

Time

Domain

Technology
Reuse

“Repeatable”

Provides:
- Reduced effort
- Robustness

Facilitated by:
- Configurability
- Parametrization
- Metadata

Example:
Same implementation of the service applied every month. The service is robust to minor changes by tuning by statistical end-users.
Reuse

“Generic”

Provides:
- Reduced effort
- Standardization

Facilitated by:
- Statistical service orientation
- Data architecture & standards
- Parametrization

Example:
Same service applied in different topic areas. The service makes ‘sense’ in statistics and has been configured to use different data in each case.
Reuse

“Shareable”

Provides:
- Quality
- Trust / partnerships

Facilitated by:
- Shared standards
- Licences / source code
- Documentation
- Interfaces
- Support arrangements / SLAs / security

Example:
A service is shared with other organisations as either a service or a piece of code. The service has a licence that allows those organisations to use it and a support arrangement.
Reuse

“Technology agnostic”

Provides:
- Robustness
- Flexibility

Facilitated by:
- Interfaces
- Technology choices (OS)
- Standards (e.g., CSPA)
- “Good design”

Example:
A service has been deployed and made available over an API. The service consumes data and parameters using a clearly defined open standard.
Approaches to reuse

• Shared – one common instance accessed across reusing NSIs

• Replicated – each NSI holds a duplicate service instance

• Interoperable – separately built services designed for effective joint operation
ESSNet reuse: Questionnaire Generator

• Eno: tool that generates survey questionnaires starting from their formal description in DDI.

• Can create questionnaires in different formats from the same DDI description: Xforms, PDF, (Blaise)

• Available as a REST Web Service

• Replicated, shared, interoperable reuse - reaching real business implementation
Standard development process

- The system designer completes a high-level design and specifications of the components of that design.
- These specifications are used to find components to reuse.
Reuse driven development process

- Reusability drives the design process.
- Rather than design then search for reusable components, designers first search for reusable components. They base their design on these components.
Eno reuse dimensions

• Domain: Same service applied in different topic areas

• Time: Same implementation of the service applied every month.

• Technology: A service has been deployed and made available over an API. The service consumes data and parameters using a clearly defined open standard.

• Organisation: reused from INSEE to SURS by replication.
Conclusions

• Service reuse increases productivity, quality and reliability and decreases cost and implementation time.

• By far the most important part of the reuse process is the people.

• If the concept of reuse and its benefits are not understood in the organisation, reuse won't happen.

• Reuse principles and processes should be incorporated into the software development & deployment process.