

CRF Reporter, to 2014 and beyond

Technical considerations for the support of the future GHG reporting regimes

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Current CRF Reporter – The good

- All Annex I Parties successfully use it for their submissions.
- User interface meets the requirements.
- Its use of metadata has proven it self.
- Clear XML exchange format allows Parties to interface with their national systems.
- CRF XML allows flexible integration with GHG IS.
- Sectorial experts can work independently.
- It is well supported by the UNFCCC secretariat.
- **It supports the process!**



Current CRF Reporter – Major issues

- It is a desktop application accessible only to one person at the time.
- It is slow, generating a submission can take more than 12 hours.
- User needs to manage backups.
- Difficult to implement small fixes.
- Users often require support.

Current CRF Reporter – Major risks

- Underlying software technology is partly not supported.
- It exists of many components and dependencies that need to be managed (These components all have their own changes)
- Need to support many versions of desktop OS's and MS office versions.
- Database continues to grow significantly.
- Internal calculation engine is complex and not flexible.
- Use of generic approach makes it hard to implement changes
- Recalculation DB logic is error prone.
- Performance issues are very difficult to address.



Current CRF Reporter – Conclusion

- Desktop only approach is outdated and too limited.
- We need to be aware of the time frame the system will be used (ten years +) and future change during its life span needs to be considered now.
- We need to be aware of various user platforms.
- **Current CRF Reporter has reached the end of its lifetime and needs to be replaced!**

How to move forward

- Look at the baseline.

What have we got?

- Look at the various software components.

What do we need?

- Look at development options.

How will we get it?

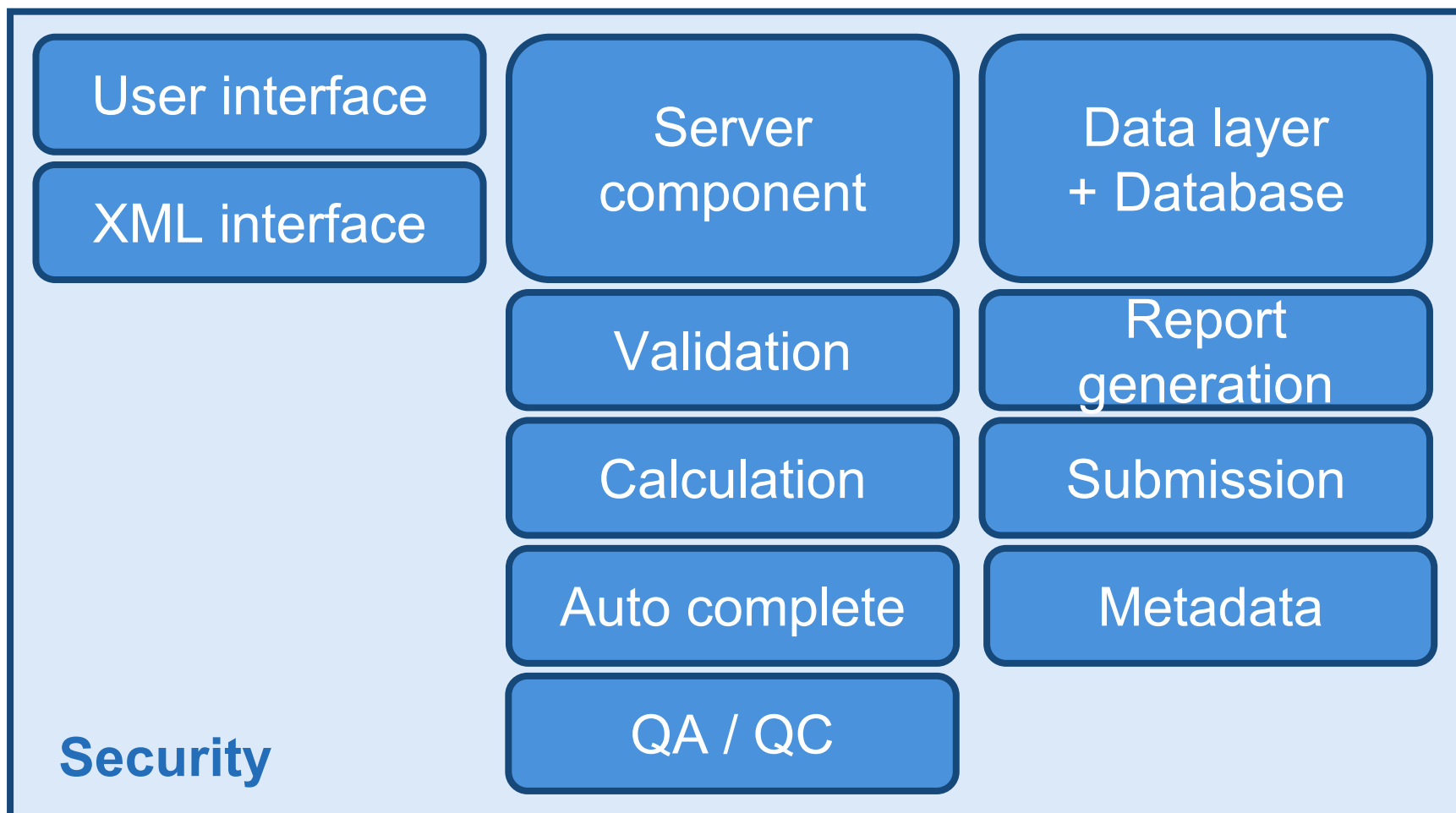
- Look at hosting options.

How will we run it?

New CRF software – *what have we got?*

- Basic functional requirements of the software are clear.
- Tree based structure with data entry grids works well.
- Automated generation of tables based on data in system works well.
- The existing well defined XML exchange format utilized by both Parties systems and secretariat's systems.

New CRF Software - What do we need?



New CRF Software – Security

- At the core of the system.
- Design needs to support various deployment modes.
- Needs to enable authorization of submissions on a national level.
- Needs to support user roles.
- **Needs to secure Parties important and sensitive emissions data!**

New CRF Software – User interface

- Need to support it for many years after the development.
 - Lots has changed in the approach to rich UIs in data focused application since the original CRF Reporter.
 - Web based client removes dependency on client OS, software and libraries (but dependency on browser).
 - Continues to use tree-node and data grid
 - Use of HTML5/Java script features and AJAX is desirable.
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- **New CRF Software should be web based.**
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New CRF Software – XML interface

- We know the current XML / Metadata widely used by Parties.
 - Used by 3rd party developers to integrate with CRF.
 - Used for submission process.
 - Most stable part of current CRF Reporter.
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- **CRF XML should not change other than the required metadata changes to reflect guidelines.**

New CRF Software – Web server

- Core component, choices around this will determine the limitations of the system!
 - Technology chosen should:
 - a) be stable, mature with an expected life of at least ten years.
 - b) Have sufficient practitioners to find staff to support it.
 - c) Support various deployment scenarios.
 - d) Have appropriate licensing model.
 - **Important decisions remain to be taken.**
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New CRF Software – Data layer + Database

- Designed for performance.
 - Should be understandable by humans and system.
 - Should support multiple submissions.
 - Recalculation DB can be generated retrospectively give a certain submission.
 - Implementation should allow for changing the database.
 - Should fit with the chosen deployment model (Licensing).
 - Should partly be metadata driven.
 - **Complete redesign of this part is required.**
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New CRF Software – Business logic layer

- Updating of a business rule should not require a code deployment.
- Business rules should not be too generic and executed at an appropriate level.
- QA/QC reports from the CRF Software will be used during the review process (transparency to Parties).
- **Validation, calculation or autocomplete rules should be implemented using a business rules engine.**

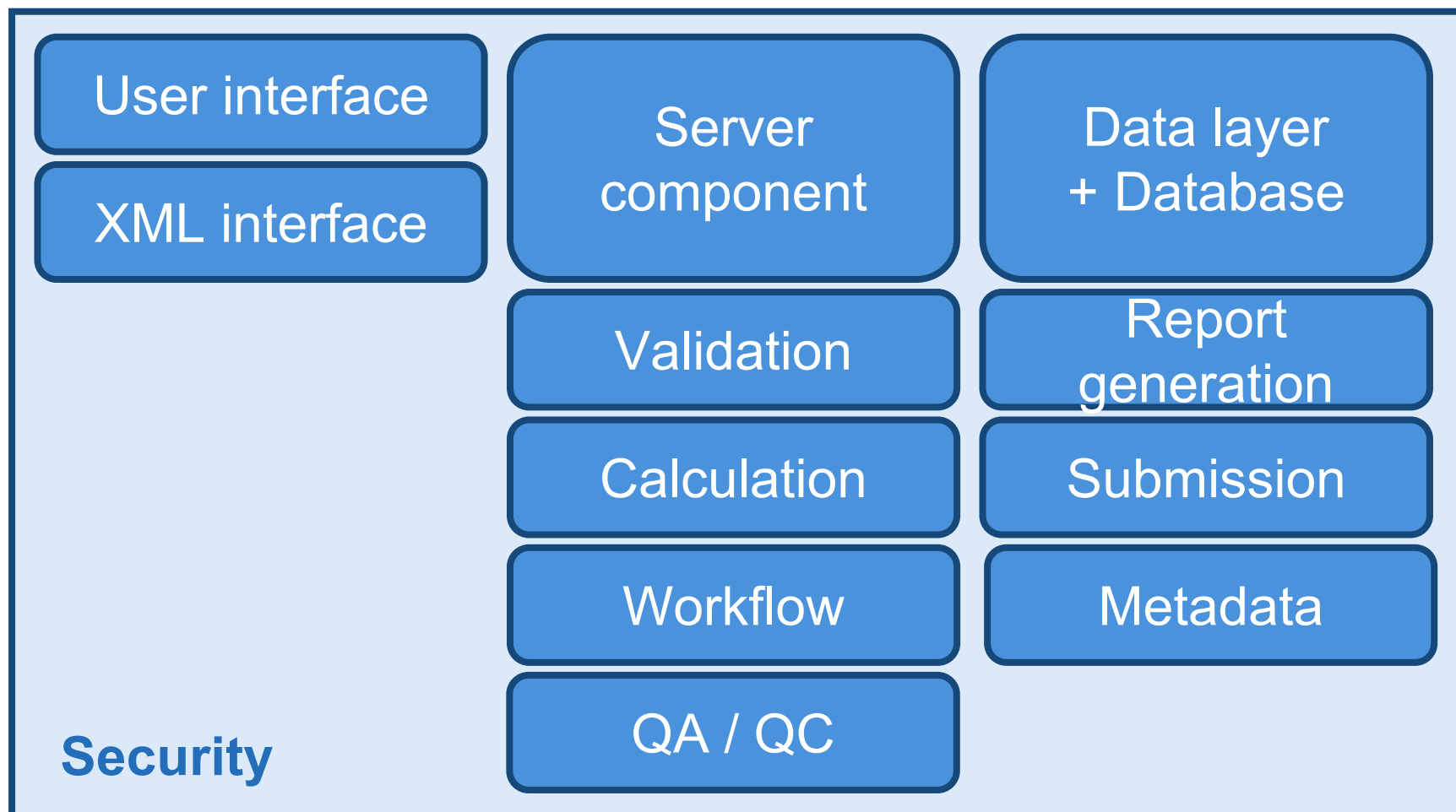


New CRF Software – Submission process

- End to end, from CRF software to UNFCCC submission portal.
- Secure so that only authorized user can perform the submission.
- Containing reviewed tables, generated XML and accompanying letter.
- **Design should make the whole process automatic (attention is needed to managing the formal approval by Party officials).**



New CRF Software



New CRF Software – *How will we get it?*

Development options:

- In-house development by UNFCCC.
- Outsource by means of a Request For Proposal.

New CRF Software – Development options

- In-house development by UNFCCC

Pros	Cons
Full in-house knowledge and understanding of the requirements	UNFCCC does not have experience developing such software in-house
Full in-house understanding of Metadata definitions and implementation	New staff needs to be hired for this, therefore the quality of the team cannot be guaranteed before hand.
Full in-house understanding of current CRF Reporter and its mistakes	

New CRF Software – Development options

- Outsource by means of a Request For Proposal

Pros	Cons
Team of experienced developers and project manager will work on development.	Developers will have to be introduced to the world of GHG emission reporting
Secretariat can concentrate on documenting functional and requirements, technical architecture and interface definitions.	RFP process will take time
Full transparency to Parties on the development process	



New CRF Software – *How will we run it?*

Hosting options:

- 1.Desktop installation like current CRF Reporter.
- 2.42 National server side installation, hosted by Parties.
- 3.Single server installation *operated* by UNFCCC.
- 4.Single server installation *operated* by 3rd Party.
- 5.Combination of these options.

•Each has pro's and con's, detailed analysis is needed.



New CRF Software – Future

- The new software will be used for quite some time and a transparent approach for managing the software and its associated costs after the closure of the development project needs to be in place. It will be a task of the development project to establish such a approach (see a second presentation by Sergey Kononov).

Thank you for your attention!



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New CRF Software – Hosting options

- Desktop installation like current CRF Reporter.

Pros	Cons
Same as current	Need to support end users with various degree of IT understanding
No network connection required	Need to support many different OS/ Language/ Hardware configurations
No need to implement multi user mode	Need to also support the chosen database solution
No hosting costs for UNFCCC	Impact of the continues data growth not managed
	Backups not guaranteed.
	Different users could host different versions of the software

New CRF Software – Hosting options

- 42 National server side installation, hosted by Parties.

Pros	Cons
Hosted by professional IT department.	Need to support multiple parties with various levels of IT maturity.
Higher trust in backup and recovery.	Different Parties could host different versions of the software.
No hosting costs for UNFCCC.	Implementing emergency fixes complicated by Parties internal change processes.
	System can only be access via network.

New CRF Software – Hosting options

- Single server installation operated by UNFCCC.

Pros	Cons
Operated by professional IT department.	System security needs to be well defined.
High trust in backup and recovery.	UNFCCC responsible for system availability.
All parties use same version of the software.	Required SLA may not fit with UNFCCC's default SLA.
Managed change procedure.	System can only be access via internet.
Direct access to all parts of the system in case of problems.	

New CRF Software – Hosting options

- Single server installation operated by 3rd Party.

Pros	Cons
Operated by professional IT department.	System security needs to be well defined.
High trust in backup and recovery.	System can only be access via internet.
All parties use same version of the software.	3 rd Party needs to be managed.
Managed change procedure.	
One dedicated partner when supporting the system.	

New CRF Software – Hosting options

- Combination of these options.

Pros	Cons
Parties can chose their preferred option.	UNFCCC needs to support multiple models.