MAANMITTAUSLAITOS
NATIONAL LAND SURVEY OF FINLAND

Exploring the Agile Way – case Finnish Geoportal

Agilia conference 2011

23rd March, 2011

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National Land Survey of Finland

FINNISH QUALITY AWARD 2009

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- Finnish National Geoportal – Geoportal.fi
- Building a Geoportal – the traditional approach
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- Conclusions

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National Land Survey of Finland

- Responsible for
  - Finnish cadastral system
  - Topographical mapping and data collection
  - Promoting shared use of geographical information
- Established 1813
- Based in Helsinki with 12 nationwide district offices
- Employs 2000 people
- Development centre with 120 people
  - Spatial data infrastructure team 10 people

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Paikkatietoikkuna – Geoportal.fi

- National geoportal
  - INSPIRE Discovery Service + User interfaces for View, Download, Transformation and Registry Services
  - INSPIRE support site
  - A joint venture with major Geographical Information data producers in Finland
- Pilot version released July 2009
  - Improvements during 2009, totalling 1 year for the pilot
- Open Source implementation
  - Based on integration of Open Source components
  - Free distribution of source code

Building a Geoportal – the traditional approach

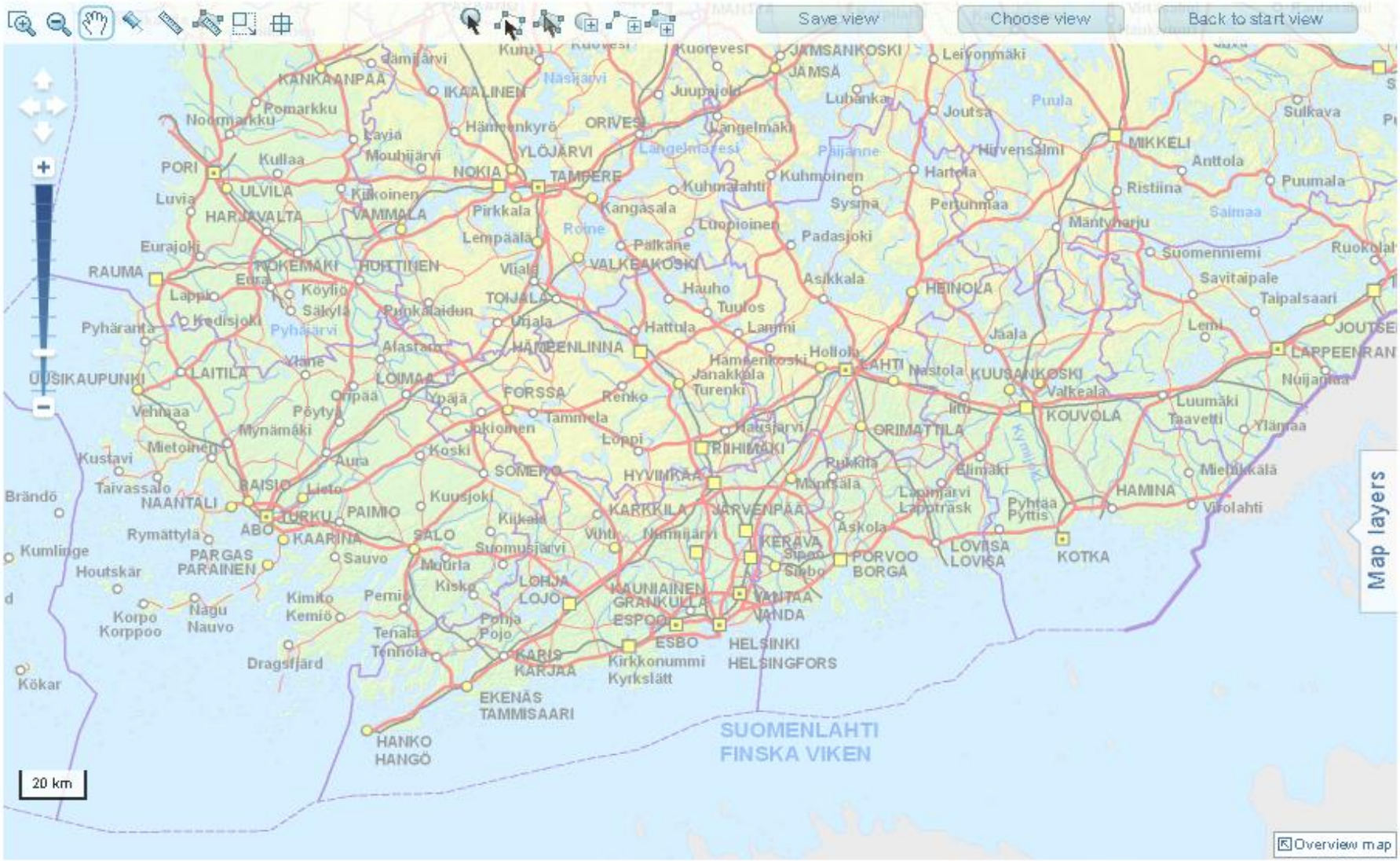
- A Pilot for the Finnish Geoportal was built during 2009 using a conventional waterfall process, though based completely on Open Source software
- Partner surveys and analysis of what functionality is needed were made
- Detailed requirements specification was written
- A conventional bidding process was started
- A consultancy company was contracted to deliver the defined Geoportal
- The definitions were handed over to the consultant
- Then we sat back and waited for the results…

Paikkatietoikkuna

2009

Search... Search

Etusivu | Ajankohtaista | Paikkatiedot | Organisaatiot | Neuvola | Yhteisöt | Karttaikkuna



1 : 1417324 EPSG:3067 N: 6875020, E: 200198

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Problems with the traditional - 1

- **Partner surveys and analysis of what functionality is needed?**
  - **It was not possible to identify all requirements at the same time despite of repeated surveys and analysis**
- **Detailed requirements specifications?**
  - **It proved impossible to write an accurate requirements specification for the entire duration of the project**

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Problems with the traditional - 2

- **Bidding process and consultancy company selection for delivery?**
  - **The competence of the consultant was assessed mostly based on references and the project plan provided**
- **Definitions handover?**
  - **It was impossible to ensure, that the consultant and the customer share a common understanding of the expected results**

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Problems with the traditional - 3

- **Sitting back and waiting for the results…?**
  - **While there was some communication during the development process, the results delivered were disappointing**
    - **Functionality not according to specifications**
    - **Specifications had been misinterpreted**
    - **Low overall quality**
- **..and as a final Bonus:**
  - **The agreement with the consultant limited the usage of the Open Source code developed**

General dissatisfaction and piles of unnecessary work..

What is the cure?

The Agile Way:

1) **Choose Agile methods for development**
2) **Pay close attention to the bidding procedure**
3) **Involve the partners in the whole process**
4) **Fully exploit the benefits of Open Source**

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The new Geoportal project

- Round up a Scrum team with 6 people
  - Product owner from NLS
  - Software architect/developer from NLS
  - Scrum master and 3 developers via outsourcing
- Started at 03/2010
- Duration 1 year until 03/2011
- The whole team worked at the NLS office

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Release plan v. 1

2010

View Service UI – Map Service for Citizens (June 2010)

Embedded Map Service for Data Providers (June 2010)

Download Service UI, files (September 2010)
Discovery Service UI integration (September 2010)

Registry Service (October 2010)

Download Service UI, WFS (November 2010)

Tools for data producers to help with linking of Network Services (Dec 2010)

2011

Monitoring and Reporting tools (January 2011)

Semantic search (February 2011)

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Releases as they turned out

2010

View Service UI – Map Service for Citizens (June 2010 - released)

Embedded Map Service for Data Providers (August 2010 - released)

Download Service UI, files (October 2010 - released)

Discovery Service UI integration (October 2010 - released)

2011

Registry Service (February 2011 - released)

Download Service UI, WFS (February 2011 - released)

Suomeksi | på Svenska | in English

2010

Paikkatietoikkuna

A+ A-

Search... SEARCH

FRONTPAGE MAP WINDOW

Paikkatietoikkuna – Finnish Geoportal

Paikkatietoikkuna is a national portal that, with words and map pictures, presents the spatial data produced and exploited in the Finnish society.

Map window offers a possibility to browse dozens of map levels, produced by different organizations, on different themes, such as terrain, soil and land use as well as traffic network.

Paikkatietoikkuna is based on open source software. You may dowload the source code here.

Get to know spatial data sets | spatial data organisations | spatial data services

Digiroad

Open in map window

Previous | Next

Digiroad

Digiroad, administrated by The Finnish Transport Agency, is a national road and street database that contains information on the geometry of roads and streets as well as their physical features.

GISexpo 2010 – Reserve your booth now!

GIS expo paikkatietomarkkinat

GI experts meets again in Helsinki Fair Centre 2.-3.11.2010. GISexpo is the largest Finnish event in the field of geographic information. It´s now time to reserve your booth in the exhibition.

Read more...

The new Paikkatietoikkuna shows maps one on the other

The national spatial data portal www.paikkatietoikkuna.fi has opened. Several data producers offer a varied range of maps for common use.

Read more


Suomeksi | på Svenska | in English
Paikkatietoikkuna
2010
A+
A-
Search...
SEARCH
FRONTPAGE
MAP WINDOW
MAP LAYERS
Theme
Find map layers
Area management/restriction zones
Geology
Administrative units
Hydrography
Elevation
Transport networks
Land use
Land cover
Topographic maps
Guide maps
Orthoimagery
Addresses
Geographical names
Selected map layers
MML Background Maps
40%
Find places
Find
VUODEN
LAATUINNOVAATIO
2010
N: 0 E: 0
http://www.geoportal.fi
2009

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The Agile Way - 1

- **Choose Agile methods for development**
  - **Task Definitions are written in form of a *Product Backlog* which *evolves* throughout the entire project**
  - **Results are demonstrated after each *sprint* – new functionality e.g. every 2 weeks**
  - **Continuous *testing* - mistakes or wrong choices you make will show up soon**
  - **The *priorisation* process ensures the critical and most cost-beneficial functionality is implemented first (*80/20 rule*)**
  - **Sense of control of the project through constant progress monitoring**

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The Agile Way - 2

- Pay attention to the procurement processes
  - Focus on competence instead of the end product – avoid having to provide detailed technical specifications
  - Establish the key competences required for producing the outcome and make a request for tender based on those
  - Evaluate the competence of *actual* developers and consultants, not references of the company
    - The references of the company bear little significance, if all developers appointed to your project are beginners!
  - Ensure you have people with all required competence: e.g. architecture design, graphical desing, usability…
    - Possibly separate procurements for people with different competences
  - Consider having the whole team work at/nearby your location

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The Agile Way - 3

- **Involve the partners in the process**
  - **Gather user requirements constantly**
  - **Partners are your best testers**
  - **Make it a joint venture *"This is our common Geoportal"***
  - **Create Win-Win benefits *"If you give your data to the service, I'll provide you with an embedded map service"***
  - **Make sure partners see the benefits they will get - communication**

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The Agile Way - 4

- **Fully exploit the benefits of Open Source**
  - **Ensure liberal licensing policy in the request for tender and the consultancy agreement**
  - **Distribute your source code – ”Code developed using public funds should be public”!**
  - **Make instructions and examples how to use the code**
  - **Contribute to the OS community**
  - **Seek joint projects with organisations with similar needs for developing new features**
  - **Utilize common components and platforms**

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The Goodies…

- Higher quality outcome
- Possibility to alter requirements as the laws and needs change; without time- and money-consuming change management processes
- Time and effort not wasted due to errors or wrong choices, because there is continuous testing, regular checkpoints and releases
- Benefits to the whole community in form of
  - Readily applicable Open Source components
  - Accelerated data availability
- Cost savings, efficient use of Public Sector money
- Satisfied partners, management AND developers

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The Challenges…

- **Project culture at NLS**
  - **Strong project culture (good, but…)**
  - **Very detailed planning required before the project**
  - **Project success evaluation focused on evaluating the outcome in light of the original plans**
  - **Project board – project group – Scrum team –how to set up responsibilities between the organisational bodies?**
- **Training was essential for everyone, including management, to understand the new methodology**
- **Achieving commitment to methodology especially at the Project board level**

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…And don't forget to:

- Make sure the overall goal (*Vision*) is crystal clear
- Plan the architecture properly throughout the project – having an architect in the team pays off
- Choose key technologies and development principles
- Have people with competence for User interface and Usability desing as well as continuous testing
- Use collaborative & communications tools, such as Wiki, JIRA, Skype…
- Allocate enough time for Product Owner tasks, especially for Product Backlog maintenance

Commit yourself and others to the project!

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The law on Public Procurement

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The Directive on Public Procurement

DIRECTIVE 2004/18/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL
of 31 March 2004
on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts

As per Article 1, point 2 d), the Directive concerns "Computer and related services"

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Obligations of the Directive

Non-discrimination
Equal treatment
Transparency

Article 2:
Contracting authorities shall treat economic operators **equally and non-discriminatorily** and shall act in a **transparent** way.

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Obligations of the Directive

Non-discrimination
Equal treatment
Transparency

Article 26:
Contracting authorities may lay down special conditions relating to the performance of a contract, provided that these are **compatible with Community law** and **are indicated in the contract notice or in the specifications.**

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Obligations of the Directive

Non-discrimination
Equal treatment
Transparency

Article 53:
…the criteria on which the contracting authorities shall base the award of public contracts shall be either the '**the most economically advantageous tender**' … or the lowest price only.

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Obligations of the Directive

Non-discrimination
Equal treatment
Transparency

Article 53 (continued):
… the contracting authority shall specify in the **contract notice or in the contract documents** … **the relative weighting which it gives to each of the criteria** chosen to **determine the most economically advantageous tender.**

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Phases in Public Procurement

1) Planning of the procurement
2) Setting the requirements
3) Publication of the invitation to submit a tender
4) Receiving tenders
5) Opening of tenders
6) Verification of the suitability of tenderers
7) Evaluation of the contents of tenders
8) Choosing the winning tender
9) The decision on awarding the contract
10) Notification of the decision and the instructions for appeal
11) Concluding the contract
12) Publication of a notice of the results of the award procedure

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Key phases in Agile Procurement

1) Planning of the procurement
2) Setting the requirements
3) Publication of the invitation to submit a tender
4) Receiving tenders
5) Opening of tenders
6) Verification of the suitability of tenderers
7) Evaluation of the contents of tenders
8) Choosing the winning tender
9) The decision on awarding the contract
10) Notification of the decision and the instructions for appeal
11) Concluding the contract
12) Publication of a notice of the results of the award procedure

Planning the procurement

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- **The procurement shouldn’t be just about the price or company references!**
  - **Prepare Evaluation criteria based on competence and suitability assesment of key developers and consultants**
- **The procurement shouldn’t leave chance for appeal**
  - **Ensure that the evaluation criteria is *non-discriminating***
- **The evaluation criteria must be public**
  - **Price**
  - **Competence**
  - **Suitability**
- **Consider whether you need several procurements, depending on the competence you need**

Setting the requirements

- **Competence is the key!**
  - **Agile methods -> developers have both freedom and responsibility**
  - **If a developer costs 10 % more, they can be 50 % more productive..**
  - **How to ensure the best people are chosen?**
- **Base the evaluation on knowledge and earlier work experience**
  - **Focus on technologies and software to be used**
  - **Agile skills and experience are a must if e.g. a Scrum master is needed**

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Phases of evaluation

1) **Assesment of developer competences by the tenderer**
2) **Evaluation of offered competences by the buyer based on CV:s of developers**
3) **Evaluating the suitability of developers for the work by an external expert**
4) **Competence-to-price ratio calculated using a formula, which must be public**

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Evaluation in general

- **Evaluation criteria has been published with the invitation to submit a tender – the criteria must be followed in detail!**
- **Has to take place on an equal opportunity basis**
- **Relative weight for each component must be public**
  - **Price 30 %**
  - **Competence 50 %**
  - **Suitability 20 %**
- **Use external reviewer of suitability to ensure non-biased evaluation**

Competence evaluation - 1

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Maanmittauslaitos			KOMPETENSSIT		Tarjouspyyntö
Kehittämiskeskus					10.3.2011
Paikkatietoikkunan kehittävä ylläpito					Liite 4
Tarjottavien henkilöresurssien kompetenssien kuvaus					
Nimeä kaikki tarjotut henkilöt taulukkoon			KEHITTÄJÄ A	KEHITTÄJÄ B	KEHITTÄJÄ C
NIMI			<nimi>	<nimi>	<nimi>
OHJELMOINTITYÖN KOMPETENSSIT			Arvioi kompetensseja asteikolla 0-3		
	PAINO-%		(0 = ei tuntemusta, 1 = yleiskäsitys ilman merkittävää		
Ketterät menetelmät	7		2 = hyvä vähintään vuoden kokemus, 3 = syvällinen v		
Agile-menetelmät: Kanban, Scrum, ...		*5*			
Scrum-mestari- tai vastaava kokemus		*2*			
Ohjelmointikielet ja -tekniikat	28				
Java		*10*			
JavaScript		*5*			
JSON		*5*			
AJAX		*4*			
SQL		*4*			
Sovelluskehitystekniikat	3				
Subversion (SVN), Eclipse		*2*			
JIRA, Confluence		*1*			
Kehitysympäristö	10				
Linux OS		*3*			
Apache		*4*			
Tomcat		*3*			
Avoimen lähdekoodin kirjastot ja ohjelmistot	30				
OpenLayers		*3*			
ExtJS, GeoExt		*3*			
GeoTools		*3*			
jQuery		*3*			

Competence evaluation - 2

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Hintojen keskiarvo		keltaisella merkittyihin soluihin saa kirjoittaa
Hintojen keskihajonta		

	Kehittäjä 1	Kehittäjä 2	Kehittäjä 3
Hinta	€	€	€
Hinta konsulttitunnin osalta 2011			
Optiohinta konsulttitunnin osalta 2012			
Konsulttituntihintojen keskiarvo (2011+2012)/2			
Tarjouksen vastaavuus			
Toimittajan tarjous on tarjouspyynnön mukainen (vastaus: kyllä/ei)			
Hintapisteet yhteensä	n/a	n/a	n/a

Hintapistemäärä saadaan seuraavasti:hintojen keskiarvon mukainen hinta saa 50 pistettä, kaksi kertaa keskihajonnan verran kalliimpi 0 pistettä ja kaksi

Arviointiasteikko: erinomainen = 5 pistettä, erittäin hyvä = 4 pistettä, hyvä = 3 pistettä, tyydyttävä = 2 pistettä, heikko = 1 piste, ei käy ilmi kuvauksesta/ei so

Työpersoonallisuustestin pisteet		0	0	0
Työpersoonallisuuskyselyn ja haastattelun mukainen arvio 1 - 5				

Työpersoonallisuustestin pistemäärä saadaan kertomalla arvio (1-5) 20:llä, jolloin maksimipistemäärä on 100.

Ohjelmointityön kompetenssit		Tekniset kompetenssit arvioidaan kunkin osa-alueen osalta Kompete		
	Osa-alueiden painot	Arviointiasteikon mukaiset (0-5) pistemäärät kerrotaan osa-alueen pa		
		0	0	0
		0	0	0
Ketterät menetelmät	7			
Ohjelmointikielet ja -tekniikat	28			
Sovelluskehitystekniikat	3			
Kehitysympäristö	10			
Avoimen lähdekoodin ohjelmistot ja kirjastot	30			
Esitystapakieliopit	12			
Palvelurajapinnat	10			

Competence evaluation - 2

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Painoarvot:

Hinta	30 %	0,0	0,0	0,0
Työpersoonallisuustestin tulos	20 %	0,0	0,0	0,0
Ohjelmointityön kompetenssit	50 %	0,0	0,0	0,0
Yhteensä	**100 %**	**0,0**	**0,0**	**0,0**
Sijoitus		ei voi vertailla	ei voi vertailla	ei voi vertailla

Kompetenssipisteiden perustelut

Kehittäjä 1
Kehittäjä 2
Kehittäjä 3

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Suitability evaluation

- An external expert should interview & test the offered developers
  - Evaluate the suitability to work as a member of a Scrum team
  - Ability to solve problems in an intuitive manner
- The evaluator will report a suitability rating for each developer
  - E.g. 1 to 5, with 5 being very well suitable
  - Each level of suitability brings a certain amount of points
  - Points are taken into account with a certain weight in the total evaluation of tenders
- The scale of evaluation (e.g. 1-5) and the effect on the resulting points must be made public

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Conclusions

1) Try Agile methods – You'll fall in love!
2) Being Agile reduces costs due to:
   - Ability to make changes flexibly as requirem
   - Higher quality outcome
   - Schedules being met
3) It is possible to acquire people with competence for Agile development using a tendering process which meets the requirements of the procurement directive

This is the typical Finnish Public sector worker…not very Agile

…but equipped with Agile competence, even they can find motivation to work!

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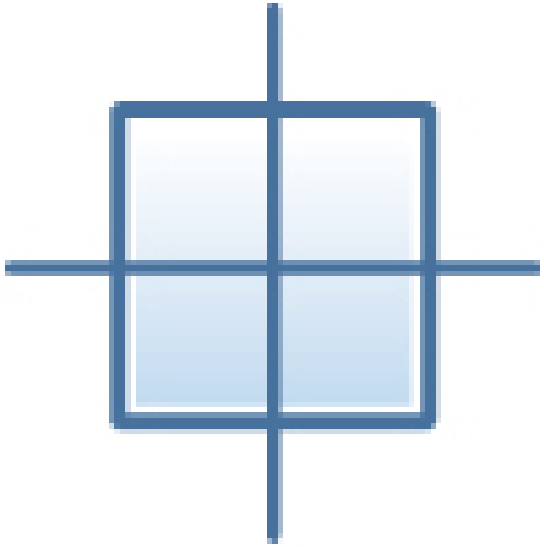
Thank You for Your Interest!



http://www.geoportal.fi

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