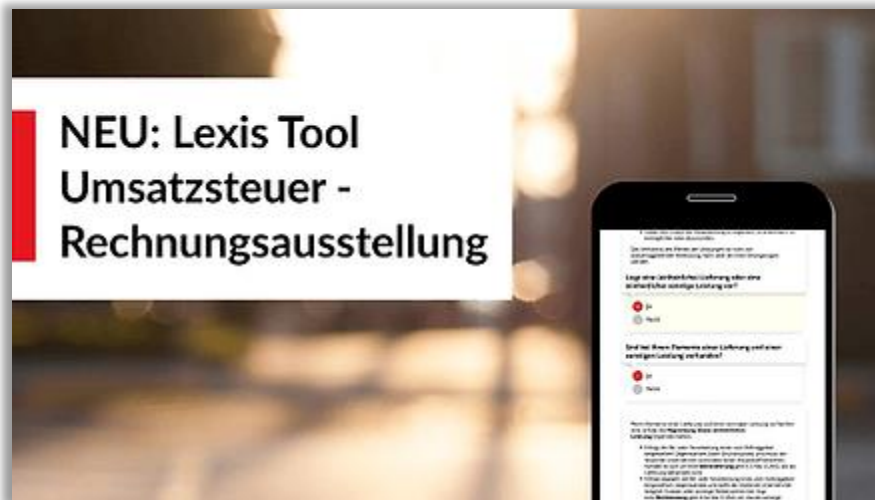


ErbRechner



LexisNexis Austria wished to develop an inheritance calculator which could reliably solve complicated inheritance entitlements under Austrian law.

In 2019, LexisNexis Austria approached LPA about developing the back-end rule-based logic for such a tool. LexisNexis Austria already had a working model in Excel but it was complex and hard to understand. LPA's challenge was to build a logic based calculator which could run on the server and work in conjunction with a web-based front end.

LPA built a prototype in 10 days to prove that their approach was viable and then spent several weeks refining and testing the calculations and extending the calculator to handle some of the more obscure cases. This engine ran on the server as a Restful service.

LexisNexis commissioned a contractor to develop an attractive front end for the web deployment. Together they designed a suitable JSON structure to communicate the data between the front-end UI and the back-end calculator.

ErbRechner was developed in under 10 weeks and made available on the LexisNexis website for over 4 years.

Dr. Matthias Brand, a leading expert in the logic of inheritance law, provided an Excel spreadsheet which calculated all inherited and compulsory parts due to entitled family members (quotas and amount).

The screenshot shows an Excel spreadsheet with the following data tables and sections:

Category	Value
assets	0.00
liabilities	0.00
net estate	0.00
spouse	0.00
estate - spouse claim	0.00
donations children	0.00
donation grandchildren 1	0.00
donation grandchildren 2	0.00
donation grandchildren 3	0.00
donation grandchildren 4	0.00
donation grandchildren 5	0.00
donation grandchildren 6	0.00
donation grandchildren 7	0.00
donation grandchildren 8	0.00
donation grandchildren 9	0.00
donation grandchildren 10	0.00
net estate plus donations minus spouse	0.00

families / lines	yes/no	share
4. Parentel	0	0
3. Parentel	0	0
2. Parentel	0	0
spouse	0	0
1. Parentel	0	0

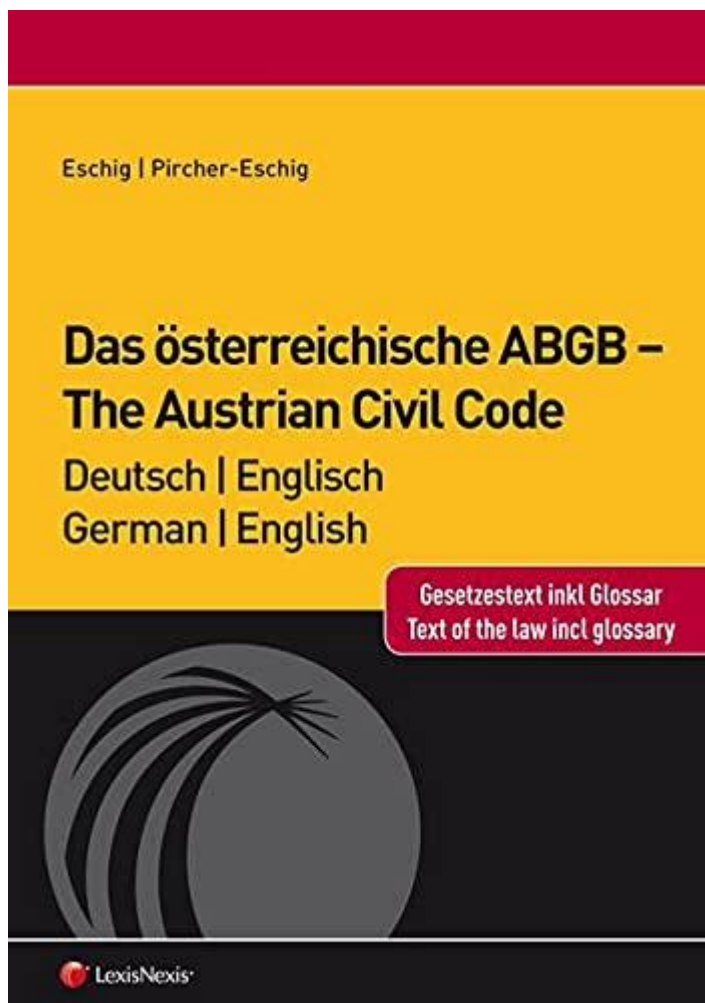
share	accumulated	final quota
0	0	0

inheritance quo	subtotal	claim
0	0.00	0.00

The spreadsheet also includes sections for 'SPOUSE' and '1. Parentel', which are highlighted in green. The '1. Parentel' section is currently empty.

This served as a functional specification for LPA.

In addition, the Austrian Civil Code was available in German and English as published by LexisNexis to act as a definite resource.



The calculations were often complicated, as the number of family members entitled to a portion theoretically was very large. It could include the spouse, parents and children as well as any number of siblings, grand-children, great grandchildren, nephews and nieces.

In the case where entitled inheritors had pre-deceased the deceased, then that could trigger another layer or two of exploration and calculation.

In the first step, the inheritance is recorded in the front end and split into assets and liabilities. These can be further defined into subcategories, such as cash, real estate or loans, tax debts, etc.

ErbRechner
by Dr. Matthias Brand

Schritt definieren Sie bitte das Geschlecht des ErblasserIn.

2 Im zweiten Schritt wird der Stammbaum des/der Verstorbenen erfasst.

3 Im dritten Schritt werden alle relevante Schenkungen erfasst.

4 Die gesetzlichen Erb- und Pflichtanteile werden berechnet.

1. Parentel 2. Parentel 3. Parentel 4. Parentel

→ Erfassen Sie die Angehörigen des/der Verstorbenen aus der ersten Parentel. [Eingabehilfe](#)

Ehefrau Maria, Tochter Johanna, Enkel, Sohn Lukas verstorben, Enkel, Enkelin Barbara, ... [+ hinzufügen](#) [weiter](#)

Maria Stangl
Erblasserin

Franz
Ehemann †

Theresa
Tochter †

Johannes
Sohn

Fabienne
Tochter

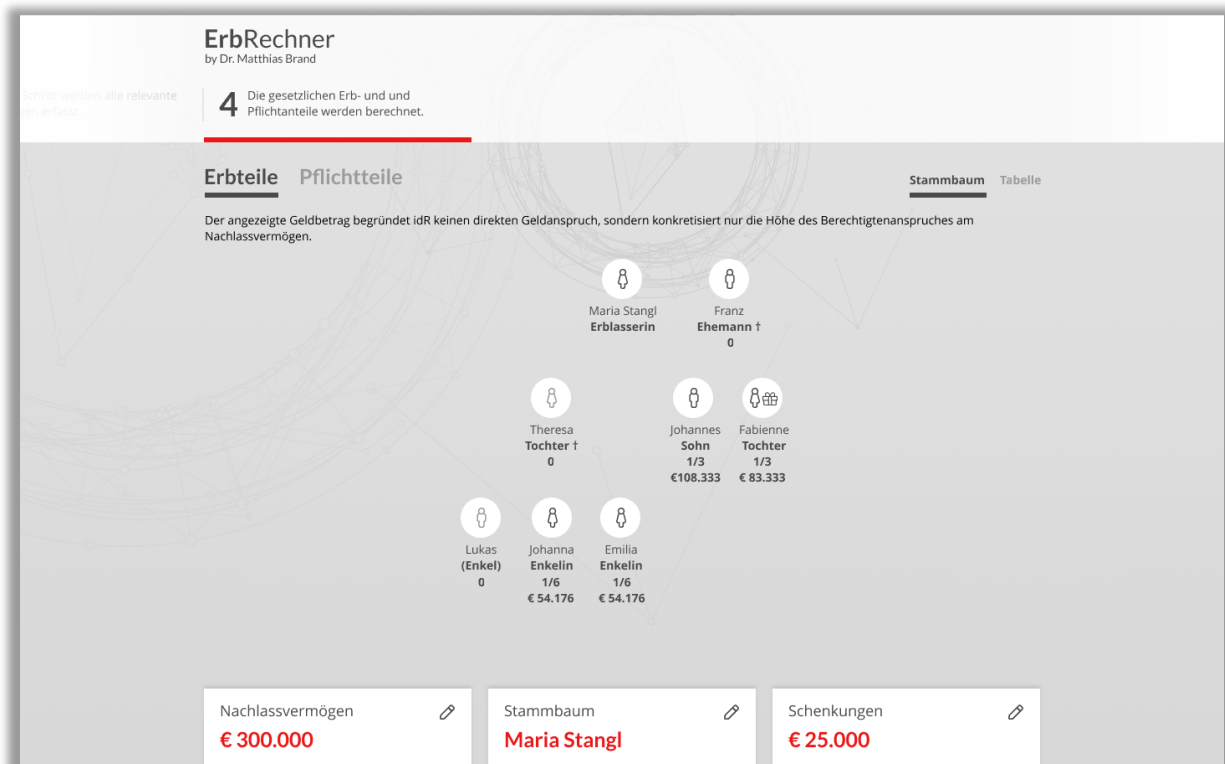
Lukas
(Enkel)

Johanna
Enkelin

Emilia
Enkelin

Nachlassvermögen € 300.000 [✎](#) [weiter](#)

In the second step, the testator's family tree is recorded up to the fourth parentel using an innovative text input. Compared to a classic structure, text entry has the advantage that the family tree can be built much more quickly. The classic structure of attaching nodes using the plus symbols was also supported.



In the third step, gifts to the heirs are recorded again in the front end as these can potentially affect entitlements.

In the fourth step all the recorded data is passed to the backend calculations developed by LPA.

The calculator was packaged up as a RESTful service which could be deployed either as a hosted service or installed on-prem inside the firewall.

The JSON representation was able to represent all the family members with slots for their gifts and entitlements.

To help develop and test the JSON, a test page was established with numerous test cases:

The screenshot shows the InTESTate web application interface. At the top, there is a dropdown menu with 'greatgrandchildren' selected, and two buttons: 'Submit' and 'Table Output'. Below these are icons for 'Prolog' and 'JSON'. The main area is divided into two sections: 'Input' and 'Output'. The 'Input' section contains a JSON snippet. The 'Output' section is currently empty. To the right of the 'Input' section is a table titled 'Input People' with the following data:

Person Id	Parent	Other Parent	Relation	Incapacity	Donations Et
p1_person_partner	none	none	spouse	0	0
p1_person_0	person_main	none	child	2	0
p1_person_0_0	p1_person_0	none	grandchild	2	0
p1_person_0_0_0	p1_person_0_0	none	greatgrandchild	1	0
p1_person_0_0_1	p1_person_0_0	none	greatgrandchild	1	0
p1_person_0_0_2	p1_person_0_0	none	greatgrandchild	1	0
p1_person_1	person_main	none	child	0	20000
p1_person_1_0	p1_person_1	none	grandchild	0	0
p1_person_1_0_0	p1_person_1_0	none	greatgrandchild	1	0
p1_person_1_1	p1_person_1	none	grandchild	1	0
p1_person_1_2	p1_person_1	none	grandchild	1	0

```

"p1_person_0": {
  "incapacity": 2,
  "parent": "person_main",
  "otherparent": "none",
  "donations": 0,
}

```

p1_person_1_0	p1_person_1	none	grandchild	0	0
p1_person_1_0_0	p1_person_1_0	none	greatgrandchild	1	0
p1_person_1_1	p1_person_1	none	grandchild	1	0
p1_person_1_2	p1_person_1	none	grandchild	1	0

Output

parentel1

Id	StamQ Et	AccuQ Et	EndQ Et	Accu Et	Claim Et	StamQ Pt	AccuQ Pt	EndQ Pt	Accu Pt	Claim Pt
p1_person_0_0	1/2			0	0			1/4	0	0
p1_person_1_0	1/6			0	0			1/12	0	0
p1_person_1_1	1/6		1/6	0	13333.33			1/12	0	3333.33
p1_person_1_2	1/6		1/6	0	13333.33			1/12	0	3333.33
p1_person_0	1/2			0	0			1/4	0	0
p1_person_1	1/2			0	0			1/4	0	0
p1_person_0_0_0	1/6		1/6	0	20000				0	0
p1_person_0_0_1	1/6		1/6	0	20000				0	0
p1_person_0_0_2	1/6		1/6	0	20000				0	0
p1_person_1_0_0	1/6		1/6	0	13333.33				0	0

Output Summary

PARENTEL1

The back-end Prolog-based inheritance engine calculates the “family tree including inheritance rates and amounts” and returns the results to be displayed graphically.

The front end makes the advice and entitlements clear, so the future testator can see at a glance how his or her assets will be divided.

ErbRechner
by Dr. Matthias Brand

Schritt werden alle relevante Personen erfasst.

4 Die gesetzlichen Erb- und und Pflichtanteile werden berechnet.

Erbteile **Pflichtteile** **Stammbaum** **Tabelle**

	Elternteil		Stammquote	Anwachsung	Endquote	Endanspruch
Franz Ehemann	verstorben		0	0	0	0
1. Parentel (Kinder)						
Theresa Tochter †	verstorben	Maria Stangl	0	1/3	0	0
Johannes Sohn	erbwüdig	Maria Stangl	0	1/3	0	108.333
Fabienne Tochter	erbwüdig	Maria Stangl	25.000	1/3	0	83.333
1. Parentel (Enkel)						
(Lukas) Enkel	erbunwürdig	Theresa	0	1/9	0	0
Johanna Enkelin	erbwüdig	Theresa	0	1/9	1/18 18.055,56	1/6 54.167
Emilia Enkelin	erbwüdig	Theresa	0	1/9	1/18 18.055,56	1/6 54.167

Nachlassvermögen € 300.000

Stammbaum **Maria Stangl**

Schenkungen € 25.000

