Transformation Baseline and Mechanics:
Financial Feasibility & Output Analysis

Ralf Schimmer & MPDL Team
Idea behind our white paper

If we want to get as many players as possible to support the proposed transformation initiative, they must all be comfortable and convinced about the relevant figures.

A solid data analysis is a *conditio sine qua non* of any large-scale transformation approach.

Thus we need to cover the two domains of:

- **Finances**
- **Publications**

Our conclusion is that the current fear of OA to become even more expensive than subscriptions is not warranted.
General financial feasibility

Main findings

There is already sufficient money in the system of scholar communication
Additional resources won’t be necessary
De facto, savings are likely to occur (technical simplifications, distribution & sales, etc.)

The transformation of existing journals can be organized on the basis of the current subscription spending
The global scholarly journal market and its financial dimensions

Scenario of transformation based on current global operating numbers per year

Market today (subscription)

- Total budget: 7.6 bn €
- 1.5 M scholarly articles in WoS; up to ~2 M overall
- 5,000 €/article WoS; 3,800 €/article overall

Market transformed (Open Access)

- Base budget: 4 bn € plus ~45% buffer
- 2 M research papers
- 2,000 €/article

Based on realistic APC expectations^1^ available for new & improved services, remaining subscriptions etc.

An OA transformation seems to be possible without financial risks

^1^ The empirical values of SCOAP3 are ~1,100 €/article; for MPG and for DFG funded universities in Germany they are ~1,250 €/article
APC levels, current evidence

- SCOAP³ < 1,100 EUR
- APC evidence published by Wellcome Trust and Austrian Science Fund (FWF)
- German OpenAPC Initiative; cap applied by German Research Foundation for APC funds = 2,000 EUR
APC levels, current evidence

German OpenAPC Initiative at https://github.com/OpenAPC/openapc-de
“In total, €4,494,568 for 3,633 articles were paid by the participating universities. Average fee is €1,237 and the median €1,203 €.”

German OpenAPC Initiative, December 2015 at https://github.com/OpenAPC/openapc-de
Global level view

Transformation means re-allocation of budgets and conversion of journals and processes

Global subscription journal budget
7.6 bn EUR p.a.
(≥3,800 EUR/article)

Open Access volume:
~13% of articles;
~4% of budget

Today’s global subscription market >> today’s open access market
Global level view

Transformation means re-allocation of budgets and conversion of journals and processes

- Remaining subscription budget 10% (~0.8 bn EUR)
- 2.8 bn EUR buffer for new & improved services etc. (without remaining subscriptions)
- Global open access journal base budget 4 bn EUR p.a. (2,000 €/article)

Assuming 90% conversion
Publication volume of selected European countries

**Total publication volume**
Articles and reviews in Web of Science

<table>
<thead>
<tr>
<th>Year of the publication</th>
<th>Germany</th>
<th>Great Britain</th>
<th>France</th>
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<td>2005</td>
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<td>2014</td>
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The dark part of the columns marks the share of articles with a corresponding author from this country (≤70%)

De-duplication of data needed since not all publications are cost relevant in an OA world, but only those of corresponding authors
Germany

Publication volumes and corresponding author shares
Articles and reviews in Web of Science

Number of articles p.a.

OA Transformation, 2014 calculation span

70,673 papers x 1,300 € = ~ 91.9m €
70,673 papers x 2,000 € = ~ 141.3m €

Data according to Palzenberger, M. (2015). Number of Scholarly Articles per Country. http://dx.doi.org/10.17617/1.2
Great Britain

Publication volumes and corresponding author shares
Articles and reviews in Web of Science

OA Transformation, 2014 calculation span

70,510 papers x 1,300 € = ~ 91.6m €
70,510 papers x 2,000 € = ~ 141.0m €

Number of articles p.a.

Data according to Palzenberger, M. (2015). Number of Scholarly Articles per Country. http://dx.doi.org/10.17617/1.2
Austria

Publication volumes and corresponding author shares

Articles and reviews in Web of Science

OA Transformation, 2014 calculation span

Number of articles p.a.

8,239 papers x 1,300 € = ~ 10.7m €
8,239 papers x 2,000 € = ~ 16.5m €
Publication volumes and corresponding author shares

Articles and reviews in Web of Science

Norway

Data according to Palzenberger, M. (2015). Number of Scholarly Articles per Country. http://dx.doi.org/10.17617/1.2
Japan

Publication volumes and corresponding author shares
Articles and reviews in Web of Science

OA Transformation, 2014 calculation span

Number of articles p.a.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Corresponding</th>
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<tbody>
<tr>
<td>2005</td>
<td>67,681</td>
<td>63,908</td>
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<tr>
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<td>63,908</td>
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<td>2007</td>
<td>65,940</td>
<td>63,908</td>
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<td>66,013</td>
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<td>65,025</td>
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<td>2011</td>
<td>64,918</td>
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<td>2012</td>
<td>64,940</td>
<td>63,908</td>
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<td>65,830</td>
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<td>2014</td>
<td>63,908</td>
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</table>

Data according to Palzenberger, M. (2015). Number of Scholarly Articles per Country. http://dx.doi.org/10.17617/1.2
## Publication volumes and corresponding author shares

### Articles and reviews in Web of Science

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Corresponding</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>72,055</td>
<td>64,493</td>
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<td>2006</td>
<td>86,101</td>
<td>77,332</td>
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<tr>
<td>2007</td>
<td>95,607</td>
<td>85,807</td>
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<tr>
<td>2008</td>
<td>109,453</td>
<td>97,927</td>
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<tr>
<td>2009</td>
<td>126,460</td>
<td>113,170</td>
</tr>
<tr>
<td>2010</td>
<td>139,420</td>
<td>123,834</td>
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<tr>
<td>2011</td>
<td>162,924</td>
<td>145,073</td>
</tr>
<tr>
<td>2012</td>
<td>188,258</td>
<td>168,420</td>
</tr>
<tr>
<td>2013</td>
<td>221,584</td>
<td>199,004</td>
</tr>
<tr>
<td>2014</td>
<td>255,193</td>
<td>230,396</td>
</tr>
</tbody>
</table>

Data according to Palzenberger, M. (2015). Number of Scholarly Articles per Country. http://dx.doi.org/10.17617/1.2
United States

Publication volumes and corresponding author shares
Articles and reviews in Web of Science

OA Transformation, 2014 calculation span

309,919 papers $\times$ 1,300 € = ~ 402.9m €
309,919 papers $\times$ 2,000 € = ~ 619.8m €

Number of articles p.a.

Data according to Palzenberger, M. (2015). Number of Scholarly Articles per Country. http://dx.doi.org/10.17617/1.2
### The financial formula of the Max Planck Society

<table>
<thead>
<tr>
<th><strong>Total paper output</strong></th>
<th>10,000 research articles per year</th>
</tr>
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<tbody>
<tr>
<td><em>According to Web of Science data, articles and reviews</em></td>
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<table>
<thead>
<tr>
<th><strong>APC relevant share</strong></th>
<th>Maximum of 6,000 (60%)</th>
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<tbody>
<tr>
<td><em>(between 40-60% corresponding author papers)</em></td>
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<tr>
<td><em>This pattern is persistent across the various OA publishers and stable over time</em></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th><strong>Average APC level monitored</strong></th>
<th>Current average APC of ~1,240 EUR</th>
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<tbody>
<tr>
<td><em>based on 992 APC invoices with a total spend (including taxes) of some €1.2m [as of December 2015]</em></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Expected total expenditure</strong></th>
<th>6,000 x average APC + safety margin ≤ €12 million</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>These anticipated costs are very comfortably within our current spending levels</em></td>
<td></td>
</tr>
</tbody>
</table>

The Max Planck Society as a heavily output-oriented research organization is able and committed to make the transformation
Detach and focus on the underlying business model of scientific journal publishing

**Functions and enabling elements of the publishing system**

- **Underlying business model of the publishing system**
  - Read-access cash flow
  - Toll-access system
  - Inherently restricted in use

- **Certification**
- **Dissemination**
- **Archival record (?)**

**Core Functions**

- Usage and impact indicators
- Quality indicators
- Brand value
- Career considerations
- Research evaluation

**Concept in progress and under (constant) debates**
Detach and focus on the underlying business model of scientific journal publishing

Functions and enabling elements of the publishing system

- Publication service based cash flow
- Open access system
- Inherently open in use and re-use

Cash flow to be changed without impacting the journals & their functions of publishing
Parts of the discussion

**BERLIN 12**

**day 1:** principle & feasibility

**BERLIN 12**

**day 2:** Expression of interest & roadmap