

Security and Business Models for Virtual Goods



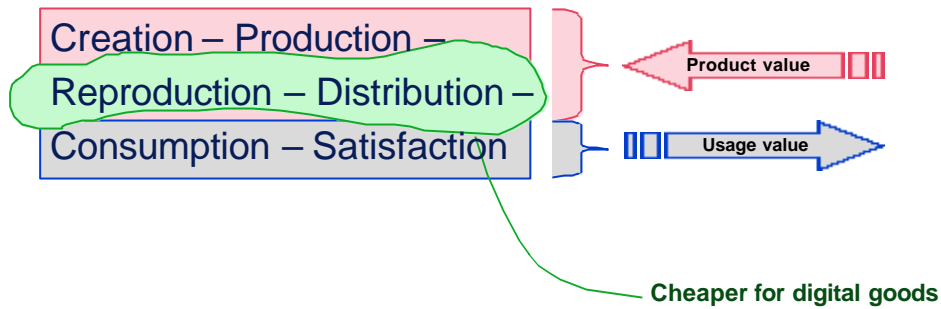
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Juan le Pin, France

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Content

- Virtual goods
- Cost of digital goods
- Business models for virtual goods
- IPMP / Lightweight model
- Alternative „Potato“ model
- Applications, challenges
- References

Life cycle of goods

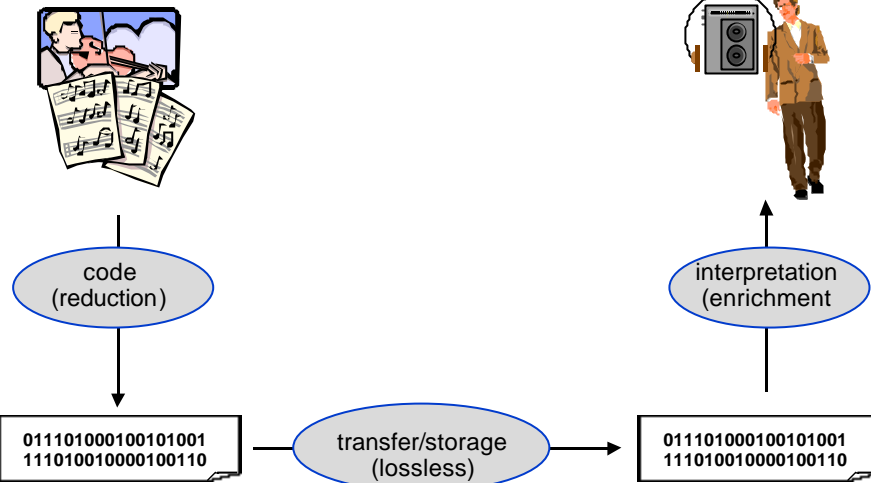


e.g., Music in the Internet: *digital good*



- Digital: **one** form of virtuality
- Special properties:
 - Lossless separation from medium
 - Re-binding to other media
 - Repeatable by free choice of user

Production / Communication / Consumption of digital goods



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Cost

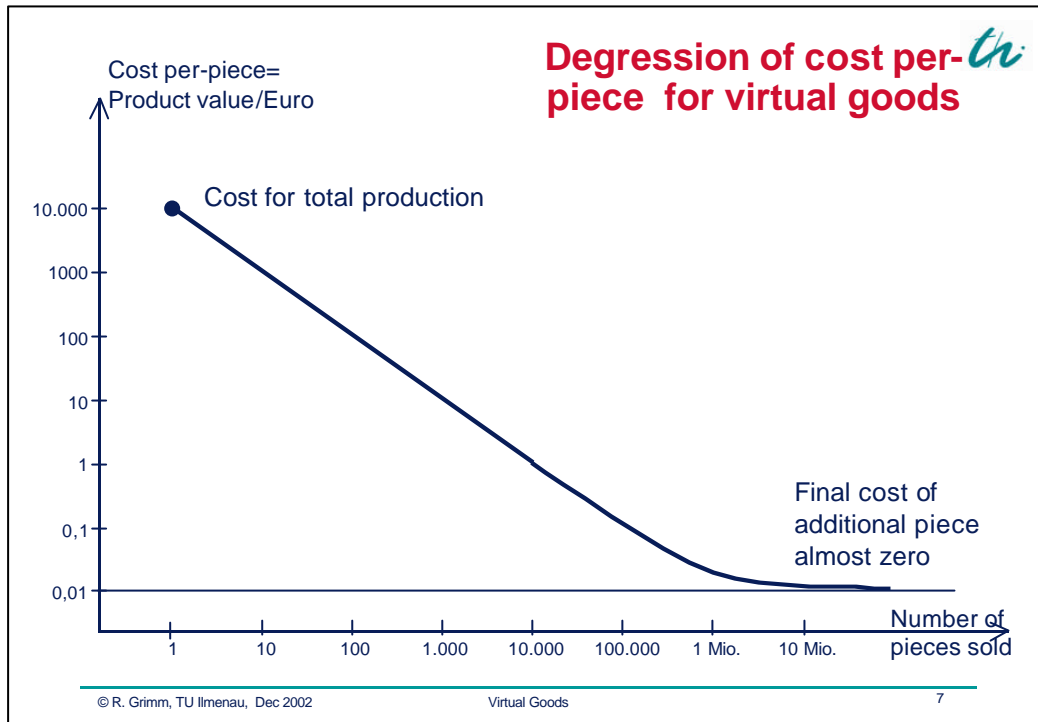



- Production of media is expensive
- Sales of products is expensive
- Investing into end-user devices is expensive
- Infrastructure of end-user devices is available
- Infrastructure of communication is available
- Consumption of products is cheap
- Communication of products is cheap
- Reproduction of products is cheap

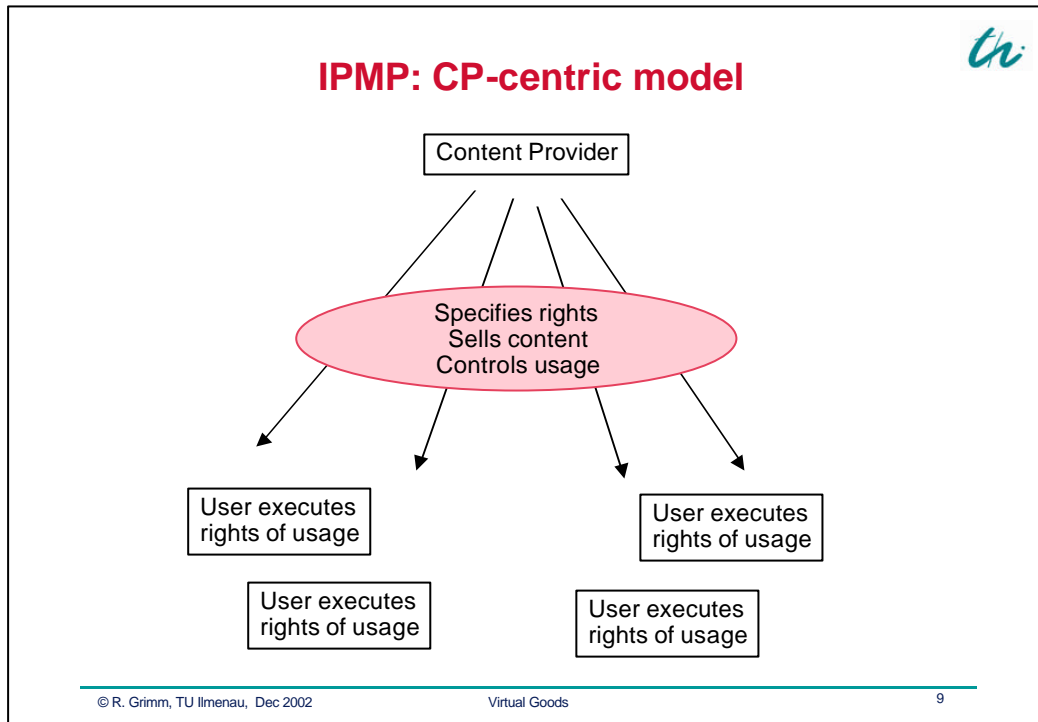
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- Business models for virtual goods** 
- **Intellectual Property Management & Protection (IPMP)**
 - Central control of usage by provider
 - Policy of rights
 - Restriction of users through policies
 - Technical basis (full IPMP): IPMP-Tools (control of users)
 - Technical basis (light-weight): signatures (traces)
 - **Friendly File-Sharing („Potato“)**
 - Decentralizes sales model
 - Policy of provisions
 - Users are free to use, but they earn provision only if they pay
 - Technical basis: sales receipt (TAN in file name)
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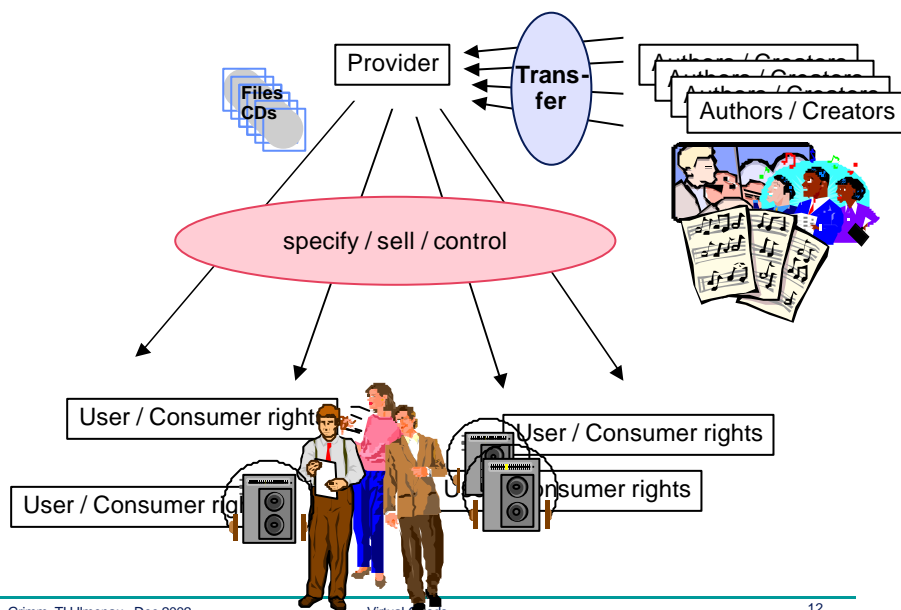
- tr*
- ### Critical comments on IPMP/DRM
1. **Conflict between interest and enforcement**
 2. **CP-centric view of policies**
 3. Burden of enforcement on the user equipment
 4. **Enforcement vs. identification of rights**
 5. Interoperability
 6. Scalability
 7. Privacy
 8. Negotiation of policies
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„LWDRM – light-weight model

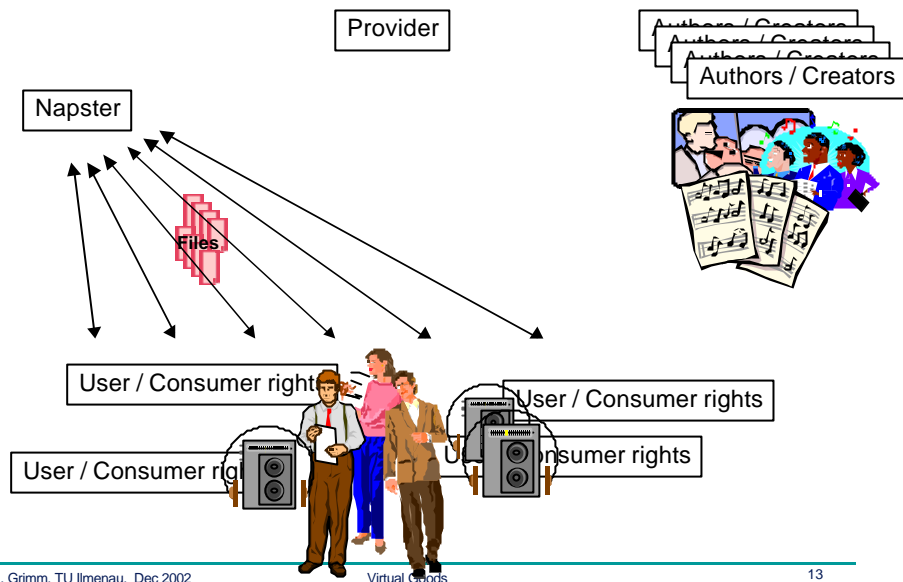


- **Re 4: enforcement vs. identification :**
- There is no unsigned content in clear in the network
- By consuming a file, its origin is verified
- By distributing a file, it is signed
- Method: signcryption (recoverable signature)

Role of content provider (BMG, Sony, ...)



Role of content provider (II)

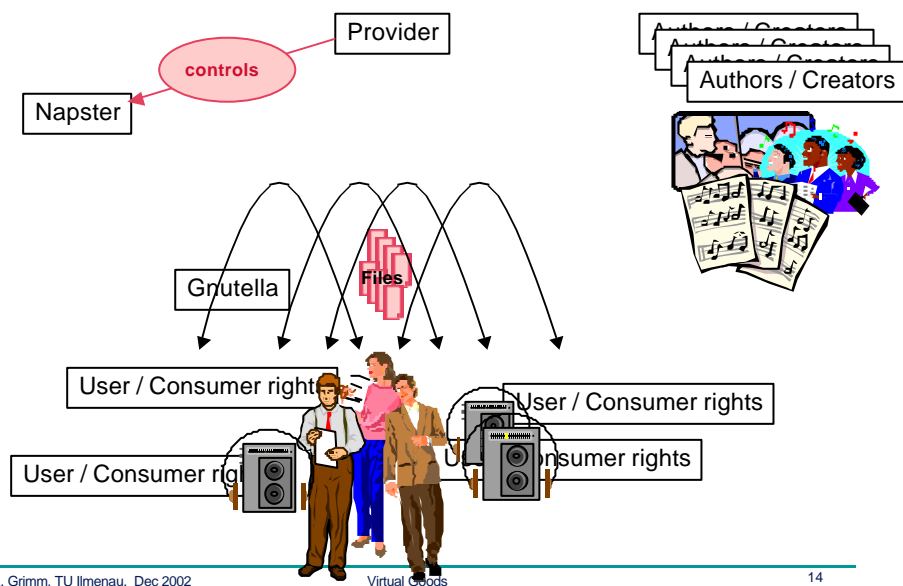


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Role of content provider (III)



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Conflict of interests

- Users are interested in re-distribution
- Users have power to re-distribute

- Providers are interested in re-distribution
- Providers want money

- Solution ???:
- Providers **prevent** users from re-distribution
 - Pursue of users
 - Criminalization of users

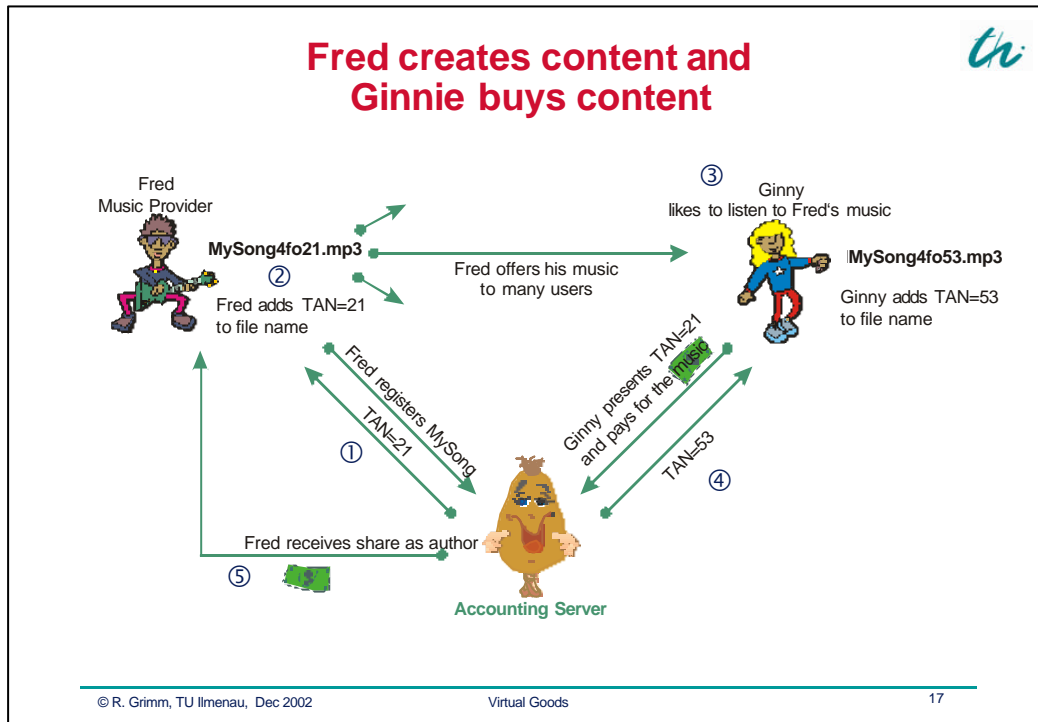


Cooperation of interests

- Users are interested in re-distribution
- Users have power to re-distribute

- Providers are interested in re-distribution
- Providers want money

- Solution:
- Providers **support** users to re-distribute
- Users earn share of income (provision)



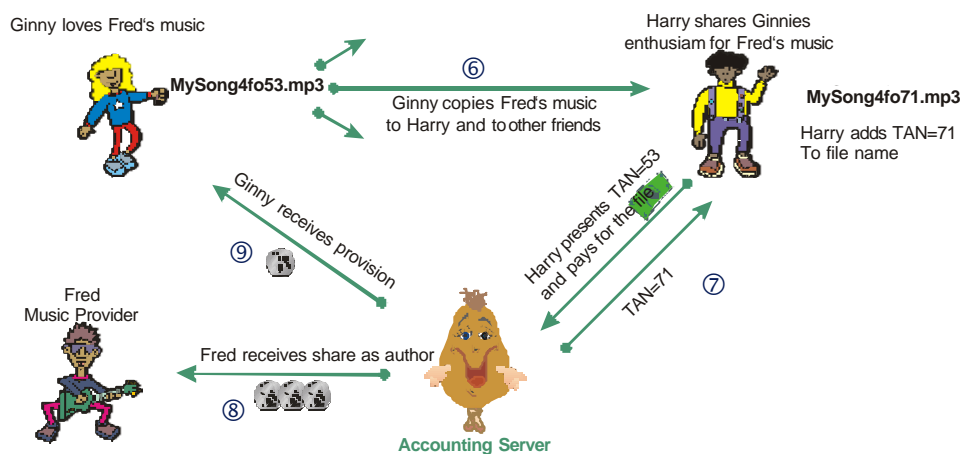
- ### Content files are registered in (distributed) accounting centers
- Fred (composer, author) creates content file
 - (1) Fred registers content file at Accounting Service of Bill und recieves TAN (add to file name)
 - (2) Fred distributes his file in the Internet
 - (3) Ginnie receives file from anywhere (e.g., from Fred)
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Payment = right to receive a provision



- (3) Ginny receives file from anywhere (e.g., from Fred)
- (4) Ginny pays for the file at Bill's and receives a receipt (her own TAN to be added to file name)
- (5) Bill pays Fred
- (6) Ginny distributes the file in the Internet

Ginny copies content to Harry



Payment = right to receive a provision



- (6) Ginnie copies file to Harry (Harry is free to pay or not)
 - (7) *In case* Harry pays,
then he receives his own TAN (to be added to file name,
 - (8) *then* Fred receives his share as an author
 - (9) *and then* Ginny receives her share as provision
-
- (6) Harry re-distributes his file ...

„Pretty Good Distribution“



- Users can earn more money than they pay
 - Users who do not pay, are free to consume and re-distribute
 - Re-distribution without payment supports former payer
 - Re-distribution supports marketing
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- Alternative structure of distribution „bottom-up“
 - „For friends only“ (name of an Ilmenau spin-off)
 - Open source in www.4fo.de



Applications

- Music marketing
- Music of young groups / composers
- Radio / TV broadcast

- Conference papers (authors want to keep right of distribution)

- Levels in games of different authors

- Community and re-distribution services (Ginnie has the best pieces, so we look for products at Ginnie's server)



Challenges

- Accounting protocol
- Central names and file register vs. de-central receipts
- Electronic payment (e.g., Paybest)
- Integrity of origin (Audio-Id, water marks?)
- Models of provision
- Models of receipts
- Roll of a PKI (needed anyway?)
- Establishment of accounting services



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<http://www.4fo.de> <http://www.4friendsonly.com>