We are in a technology revolution of the “empowered consumer”.

...in the Digital Age it is all about:

1. Staying in the Relevant Set of Consumers
2. Digital Business Models
3. Trust.
1 Attacking in the Digital Era: Strategic Challenges
2 Impact on Insurance—Big Data Use Cases
3 Challenges
The Big Data Era for Allianz

Key figures

Global Data & Analytics (May 2014)

- Focusing on Big Data Analytics
- So far, the focus on selected key markets
- “Digital touchpoints” comprised of, e.g.: system log, cookie, telematics, and IoT data
- Growth in 2015 (GD&A only):
  ≈ 5 PB production data in total, growing ever faster
- Current clusters:
  - Hybrid private cloud
  - Allianz Big Data Ecosystem (v2)
  - On German soil
  - Satellites clusters to meet local data protection legislation, but same architecture
  - Data locality, nothing shared
A Variety of Use Cases—Triggers a Zoo of DBs

Exploration ("Retrospective—On-Demand")
- Descriptive
  - Log Analytics
  - Consumer Journey Analytics
  - Fraud Analytics
  - Pricing
  - Déshèrances
  - Trajectory/ Web Pathways

Predictive
- Cyber Security
- Churn Models
- R/T Quote Analytics
- Healthy Living
- CX/ UX Predictions
- GTMX Telematics
- Campaign Management
- Predictive Underwriting
- Disease Prediction

Prescriptive
- Next Best Product
- X/ Up-Selling
- Customer Retention
- Fast Quotes
- Quote Conversion
- Home Security
- White Claims
- Outbound Call
- Data Quality Improvement
- Life Underwriting
- Data Lake

Fast Data

Slow Data
1. Attacking in the Digital Era: Strategic Challenges
2. Impact on Insurance—Big Data Use Cases
3. Challenges
Strategic goals implicate four main challenges:

1. Trust
2. Ecosystem
3. Exploratory Data Science
4. Analytical Apps
C1: Trust

Increased security in analytics through **column-based encryption**

Privacy by design supported by databases via:
- **Empowering the customer** (e.g. PKK)
- Avoiding illegal and/or unethical analytical use on database-level (e.g. aggregation, TTL, ...)

**Encryption on rest**

**Cloud**

- **Security/Privacy**
  - **Maintain high security standards** for the cloud
  - **On-database exec., data locality**
  - Staying on, e.g., German, Turkish, Chinese soil to ensure law compliance
C2: Ecosystem

**Technical Aspects**

- Data locality
- Cloud, “commoditizing the data center”

**Infrastructure and Hosting**

**Architectural**

- Decoupling data and DBs
- Avoid vendor lock-ins, open source
- Analytical apps, process-on-the-go/ pay-as-you-use

**Analytical Aspects**

**Today**

- Many databases, each of them serving tailored requirements
- CAP theorem still poses an obstacle in the Big Data world

**Tomorrow**

- Reduced complexity
- Support a multitude of use cases with fewer databases
- Disaggregated data, on demand
- Various data models (e.g.: document, graph, …)
C3: Exploratory Data Science

Agile data exploration requires us to rethink traditional approaches

Requirements

- Multi-version concurrency control
  (à la CouchDB = git for data)
- Violating the CAP-theorem:
  - Combine high degree of consistency and availability: two speed layers
  - Stable copies / Multi-staged process
  - Achieve “transparency”

Challenges

- ETL still doesn’t work
- Bridging the traditional—i.e. legacy—and new, big data world
- Filling the gap between the data lake concept and the analytical requirements (schema, semantics)
- Enabling in-memory analytics / On-demand results on fine-grained data
C4: Analytical Apps

Provisioning prescriptive, i.e. “actionable” insights and enable efficient app use

<table>
<thead>
<tr>
<th>Architecture</th>
<th>Apps</th>
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<tbody>
<tr>
<td>- Reduce architectural complexity</td>
<td>- On-demand speed for thousands of concurrent analytics users</td>
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<tr>
<td>- Lambda architecture (stream/batch/provisioning layers)</td>
<td>- Transaction processing (fraud analytics, white claims)</td>
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<td>- Enable geo-spatial analytics at scale</td>
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<td>- Online ML</td>
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