In-house FTTH access

Regulatory conditions
For the purpose of the present analysis, “in-house FTTH access” refers to the network portion from the Distribution Point (DP) to the Optical Telecommunications Outlet (OTO).
The regulatory train for FTTH in-house access is in motion worldwide.

In-house wiring is one of the key bottlenecks restricting FTTH deployment. Thus NRAs increasingly regulate sharing of in-house infrastructure to promote competition.
Main regulatory fields of action towards FTTH in-house deployment

In order to facilitate FTTH in-house deployment, regulatory measures essentially address estate/building owners and network operators.

- Access to network operators
- Balance of rights between owner and tenant

**Cross-cutting fields of action**
- Mandatory standards for ducting systems via building laws

**1. Owner vs. tenant of building**
- Access of operator to private estate and building
- Access of operator to existing infrastructure
- Access of operator to newly created infrastructure

**2. Network Operator vs. Competitor**
- Access of competitor to already existing infrastructure of network operator
- Access of competitor to newly deployed infrastructure of network operator

**3. Owner vs. Network Operator**
- Access of operator to private estate and building
- Access of operator to existing infrastructure
- Access of operator to newly created infrastructure

**4. Mandatory standards for cables via building laws**
Key challenges related to in-house FTTH access

Essential regulatory area of concern regarding FTTH access is to mitigate investment risks without disturbing the level of competition on the market.

### Prerequisites for FTTH access
- Access to buildings and in-house wiring
- House introduction of drop cabling
- Use of existing in-house cabling or new deployment

### Key challenges
- In-house cabling ≈ 43% of total NGA CAPEX
- Civil engineering is a key barrier to replicability
- Required consent of estate and building owner
- Imposed conditions by estate and building owner
- Unclear property right over building or estate
- Existing exclusivity requirements on owners
- Concerns on economic viability of FTTH access
- Risk of de facto monopoly by “first moving operator”
- Product portfolio and marketing affected
- Delay or delay of deployment and lack of investment security
- Higher retail prices complicate success
- No connection of tenants willing to connect

Access to buildings and in-house wiring

Drop segment deployment on private estate

House introduction of drop cabling

Use of existing in-house cabling or new deployment
**Strategic options for regulating in-house FTTH access**

Multi-fiber approach, single fiber unbundling and bitstream access are three prominent and complementary strategic options for competitive in-house FTTH access.

<table>
<thead>
<tr>
<th>Description</th>
<th><strong>Multiple fiber FTTH approach</strong> (infrastructure-based competition)</th>
<th><strong>Single fiber FTTH approach</strong> (“unbundled access”) (access-based competition)</th>
<th><strong>Bitstream access</strong> (service-based competition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pros</td>
<td>Fiber replicability at lower costs</td>
<td>Proven long track record in Europe</td>
<td>Lowest market entry risk and CAPEX</td>
</tr>
<tr>
<td></td>
<td>Facilitates a cooperation model</td>
<td>Lower market entry risk and CAPEX</td>
<td>Access at all network nodes of the concentration/core network</td>
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<td></td>
<td>Secures freedom of choice for user</td>
<td>Number of competitors is determined by the market</td>
<td>DSLAM, Ethernet or IP Bitstream</td>
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<td></td>
<td>Several operators reach the end-user’s home in parallel</td>
<td>Can be implemented wherever fiber rollout is economically viable</td>
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<tr>
<td></td>
<td>Deepest level of end-to-end control</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cons</td>
<td>High sunk investments required</td>
<td>Complicates cooperation models</td>
<td>No infrastructure control by access seeker</td>
</tr>
<tr>
<td></td>
<td>Higher barrier to entry</td>
<td>Only one operator can reach the end-user’s home</td>
<td>Limited product and price innovation and differentiation</td>
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<td></td>
<td>Increased penetration risks for non SMP operators</td>
<td></td>
<td>Wholesale operator manages connections</td>
</tr>
<tr>
<td></td>
<td>Only up to 4 operators reach users</td>
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The 3 options are not mutually exclusive, but rather complementary.
Key success factors for in-house FTTH access

Regulatory measures must target owners of real estate and buildings as well as “first moving operators” in order to secure speedy and cost effective in-house FTTH access.

**Obligation towards operators**
- Tolerate drop segment deployment on private estate
- Tolerate house introduction of drop cabling
- Tolerate use of existing in-house cabling or new deployment
- Provide access to existing physical infrastructure
- Provide information to existing physical infrastructure

**FTTH access independent from private owner’s consent**

**Provisions on financials:**
*Who bears costs of FTTH infrastructure deployment and what can be included in the access pricing?*

**Obligation towards building owner**
- Agreement on modalities for FTTH access deployment

**Obligation towards competitors**
- Provide access to drop cabling lines and infrastructures
- Implement network topology that enables infrastructure sharing
- Provide Information on all buildings connected

**Shared use of FTTH access infrastructure mitigates bottlenecks towards effective competition**
Regulatory options chosen by countries: The example of “multi-fiber approaches”

Albeit slightly different, the multi-fiber approaches implemented in France, Switzerland and by the EU Commission are the most prominent cases for multi-fiber FTTH access.

<table>
<thead>
<tr>
<th>Owner</th>
<th>Source</th>
<th>Nature of the approach</th>
<th>Main features of the approach</th>
</tr>
</thead>
</table>
▪ In-house network up to Distribution Point  
▪ No financial compensation to owner  
▪ Operator installs up to 4 fiber lines per building and bears costs of installation  
▪ Access by other operators upon demand  
▪ Access point outside private properties |
|             | „Fibre suisse“ model (2008) | Voluntary approach of private sector (facilitated by NRA) | ▪ Mutual agreement between competitors  
▪ Invest installs 4 fibers per home  
▪ Access point is outside private properties  
▪ Option for sharing also feeder segment  
▪ Swisscom responsible for drop segment  
▪ Owner is responsible for in-house wiring |
|             | NGA recommendation (2010) | Voluntary approach, possible mandatory for SMP in the drop cable segment (asymmetry) | ▪ Applies only with regard to SMP operators  
▪ Mandated access to the drop segment  
▪ Voluntary deployment of multiple fiber lines in the access network (+ in-house)  
▪ Where legally possible under national law, mandatory deployment of multiple fibers  
▪ NRA sets location of distribution point |
The unbundled fiber approaches in the Netherlands and Croatia are based on asymmetric regulation by NRA as a result of analysis of market n°4.
## Why Detecon

Having Detecon as partner means securing compliance of FTTH access deployment with regulatory conditions while avoiding mistakes made by other players.

<table>
<thead>
<tr>
<th>Holistic</th>
<th>Practical</th>
<th>Impact</th>
<th>Customized</th>
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<tbody>
<tr>
<td>Team of experts from all disciplines</td>
<td>Real-world solutions instead of “theory”</td>
<td>Solutions with lasting value</td>
<td>International experience adapted</td>
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### Detecon Leverage
- A dedicated project team brings together all regulatory, technical, commercial and financial expertise and experience related to FTTH access deployment in accordance with Client’s business strategy
- Based on sound regulatory strategy, Detecon’s solutions have been implemented in practice for many Clients worldwide
- Tangible solutions ready for implementation
- Integration of in-house FTTH access within Client’s overall FTTH rollout strategy
- Understanding of FTTH access challenges from NRA’s and operator’s perspective and staff involvement
- Full understanding of Client’s reality of business and local market challenges
- Project team knows Client’s business environment
- Presence with a local office in Client’s region of operation

### Client Benefit
- Regulatory bottlenecks of FTTH access are mitigated in the light of Client’s operational FTTH business imperatives
- Benefit from hands-on strategic expertise while avoiding mistakes made by other operators worldwide
- Coherence of regulatory approach to FTTH access with overall strategy
- Ownership of Client’s staff over regulatory solution
- Regulatory solutions designed for FTTH access are relevant to Client’s actual business needs
The Client leverages Detecon’s lessons learned from similar assignments in regulatory strategy for FTTH in-house access, thus avoiding mistakes made in other countries.

<table>
<thead>
<tr>
<th>Client</th>
<th>Reference Case</th>
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<tbody>
<tr>
<td>Etisalat, UAE</td>
<td>NGA Bitstream strategy&lt;br&gt;Etisalat has been imposed regulatory remedies for the provision of bitstream access based on fiber infrastructure. Detecon developed the BSA strategy and optimized the technical infrastructure setup.</td>
</tr>
<tr>
<td>Deutsche Telekom, Germany</td>
<td>Development of FTTX cooperation models&lt;br&gt;Detecon defined complimentary FTTx rollout strategies and developed regulation friendly cooperation models with competitors to facilitate CAPEX efficient rollout.</td>
</tr>
<tr>
<td>Slovak Telekom, Slovak Republic</td>
<td>NGA BSA, ULL, dark fiber reference offer&lt;br&gt;Detecon developed a successful, optimal and sustainable access regime that enabled the operator (&quot;du&quot;) to grow its customer base while protecting its current revenues.</td>
</tr>
<tr>
<td>Turk Telekom, Turkey</td>
<td>Development of Reference Bitstream Access Offer&lt;br&gt;Defined wholesale reference broadband access portfolio and setup a regulatory negotiation strategy based on state of the art costing and pricing strategies</td>
</tr>
<tr>
<td>Turk Telekom</td>
<td>BSA, LLU regulatory scenarios for Turk Telekom&lt;br&gt;Benchmarking of tariff regulation regime and regulatory decisions in selected EU member states. Recommendations for Turk Telecom on rebalancing and retail tariff regulation. In-house cabling strategy</td>
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</table>
Your Contact Persons

Dr. iur. Albert Njoume Ekango
Phone: +49 221 91611536
Mobile: +49 160 475 80 58
Fax: +49 221 91614824
e-Mail: Albert.NjoumeEkango@detecon.com

Dr. Arnulf Heuermann
Phone: +49 221 91611550
Mobile: +49 171 225 42 17
Fax: +49 221 91614630
e-Mail: Arnulf.Heuermann@detecon.com