

Working Group Business Models

Armin Lichtblau – Mentor Graphics

Markus Maier – ETAS

Goal

Association of European Suppliers for Automotive Software



AESAS wants to simplify the sales process for standard software (COTS)

AESAS provides

- ❑ Unified definitions of terms
- ❑ Support for the selection of best suited business model
- ❑ Best Practice solutions for common licensing issues

Definitions

- ❑ Business model
 - Description of standard embedded software products can be commercially exploited
 - Different characteristics are used
- ❑ Buy-out
 - Is one business model
 - Includes transfer of IP to buyer
 - Option: Buyer may have option to resell
 - Can be exclusive or non-exclusive
 - Source code in many cases required
 - restricted liability
- ❑ Terms & Conditions (T&Cs)
 - Legal requirements
- ❑ Evaluation license
 - Technical Characteristics
 - Time restricted
 - Embedded SW may have cost
 - Non-commercial
 - Support, requirement for bug fixes, legal obligations?
- ❑ Development / Non-production
 - Right to use license for development
 - Technical Characteristics
 - Commercial Characteristics
- ❑ Run-time / Production
 - Right to use license for production
 - Technical Characteristics
 - Commercial Characteristics

- ❑ **Commercial Characteristics**
 - Platform/project
 - Brand/Company
 - ECU
 - Vehicle/Car
 - Number of manufactured units
- ❑ **Technical Characteristics**
 - Microcontroller family (Same instruction set)
 - Derivative
 - Compiler
 - Version Software
 - Source code (Not for IP protection, less issues with liability)
- ❑ **Customer Characteristics**
 - OEM, car manufacturer
 - Tier 1, supplier
 - Tier 2, semiconductor manufacturer

Ownership

Association of European Suppliers for Automotive Software



□ License Owner

- OEM - Requires Subcontractor agreement
- Tier 1 - Licenses and uses in own products
- Tier 2 - Licenses and makes available to Tier 1 or OEM

- Payment terms
 - Volume dependent, upfront
 - Commercial characteristics
 - Customer characteristics
 - Actual numbers
 - Volume independent, upfront
 - Volume dependent – royalty
 - Actual numbers
 - Hybrid
 - Mix of payment terms for development and production license
 - For example: volume independent development license – volume dependent production license

Who should we be selling to

Association of European Suppliers for Automotive Software



- ❑ **Chip Vendors**
 - No OEM specific modifications wanted
 - OEM specific modification may require customization (service, upfront payment required)
 - Best possible technical optimization
 - Lowest licensing cost
 - Don't have required SW design know-how
 - Tooling could be totally different for different Tier 1s, depending on used stack
- ❑ **Tier 1**
 - Highest licensing cost
 - OEM driven
 - OEM specific modifications possible
 - Tier 1 specific middleware
 - OEM sees Tier 1 specific variants
 - More independency for Tier 1
- ❑ **OEM**
 - OEM specific modifications possible
 - Unified SW behavior from Tier 1 components
 - Better cost control

Selling to Tier 1

Association of European Suppliers for Automotive Software

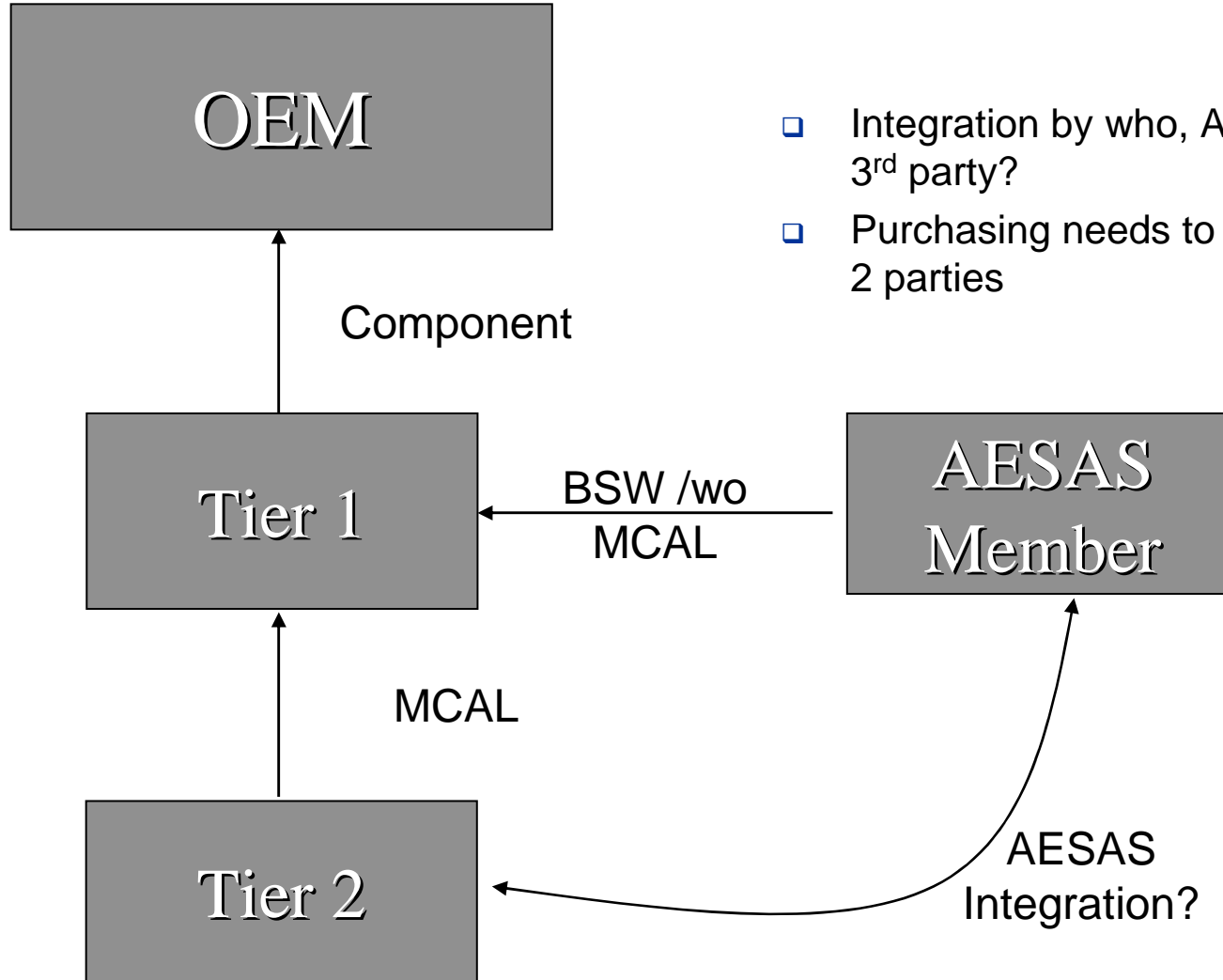


- ❑ Project business
 - Compiler, controller, project are fixed
- ❑ Central purchasing
 - IP sales
 - Sales of production rights & services for targeting
 - Platform based licenses

Business Relationship Models

Business Relationships Model1

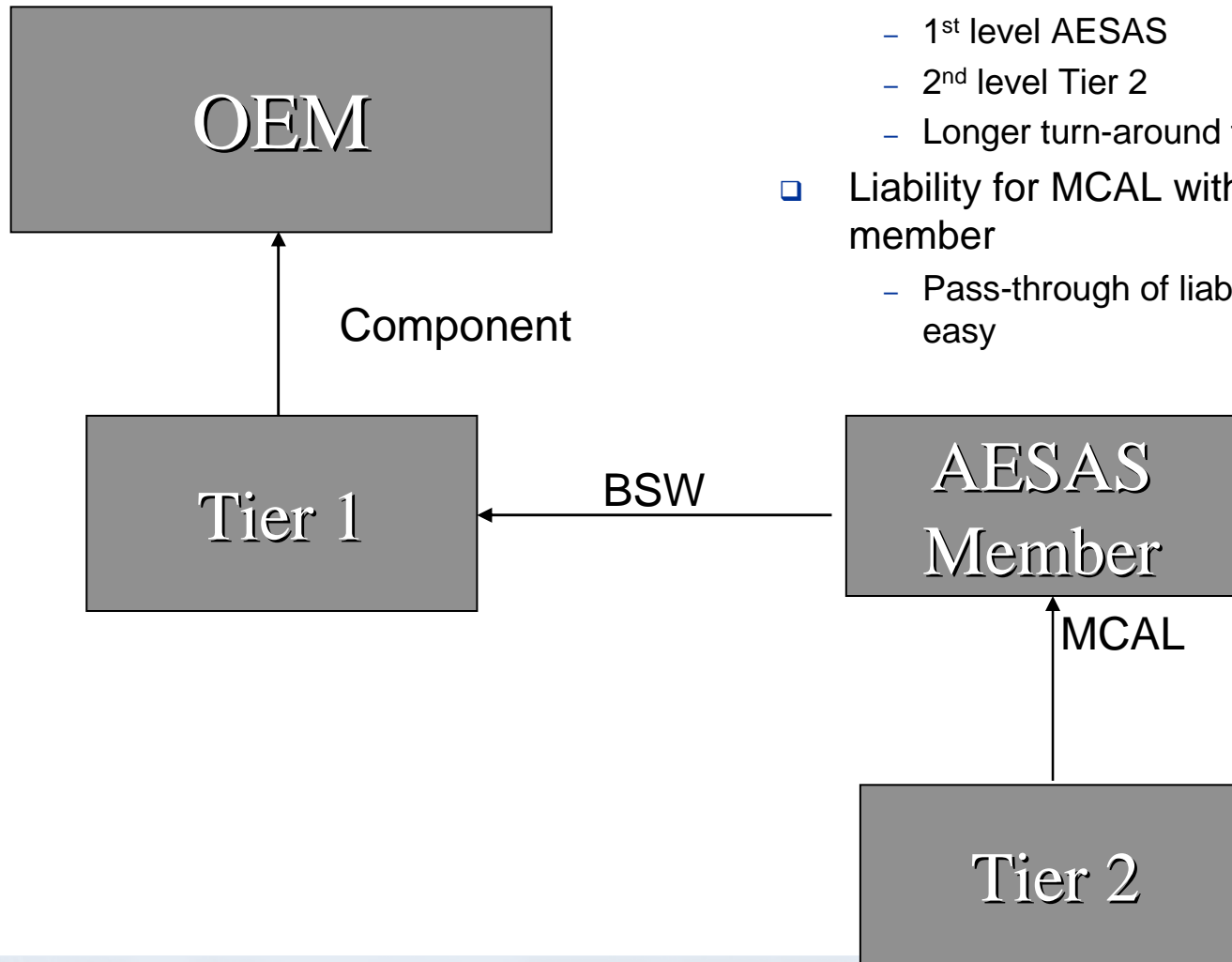
Association of European Suppliers for Automotive Software



- ❑ Integration by who, AESAS, tier 1, or 3rd party?
- ❑ Purchasing needs to deal with at least 2 parties

Business Relationships Model2

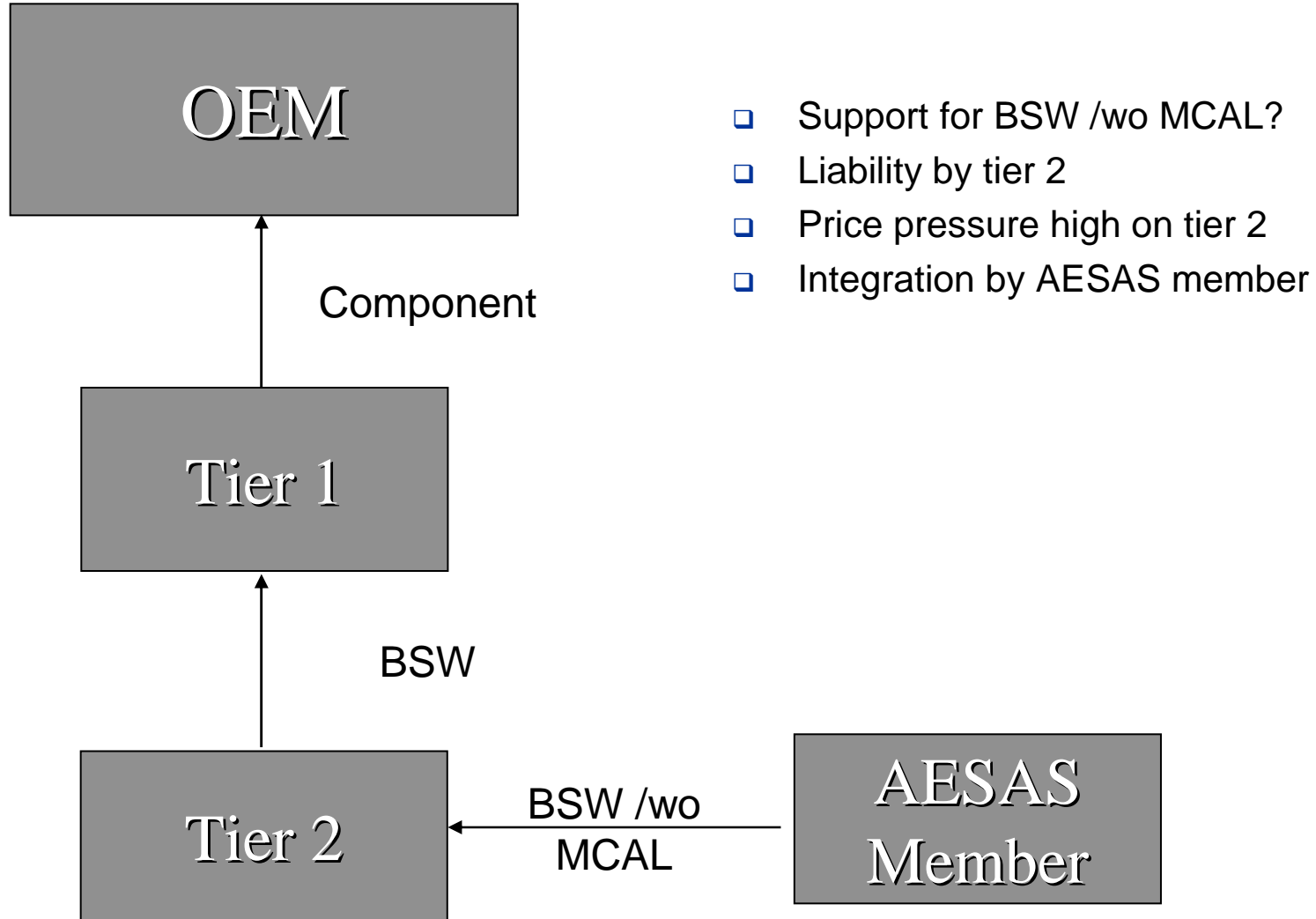
Association of European Suppliers for Automotive Software



- ❑ Support for MCAL
 - 1st level AESAS
 - 2nd level Tier 2
 - Longer turn-around times
- ❑ Liability for MCAL with AESAS member
 - Pass-through of liability to Tier2 not easy

Business Relationships Model3

Association of European Suppliers for Automotive Software



Appendix

Could be dropped for web info.

Pros & Cons - Payment Terms

Association of European Suppliers for Automotive Software



- ❑ Volume dependent
 - Risk for recall increases with number of produced units
 - Cost of recall increases and cost for insurance increases
 - Risk/Chance sharing
 - Delayed cashflow, different budget (R&D vs. production)
 - Chip Vendor don't benefit from different volumes for SW
 - Effort to track is high compared to business volume
- ❑ Volume dependent, upfront
 - Same as royalty
 - No tracking required
 - Fixed cost easier to calculate
 - Low acceptance at OEMs
- ❑ Volume independent, upfront
 - No tracking
 - Fixed cost
- ❑ Hybrid
 - Different budgets can be addressed (development and production)
 - Support required only for engineering

Who should be buying

Association of European Suppliers for Automotive Software



What the OEM thinks

- Chip Vendors
 - - No OEM specific modifications
 - + Best technical optimization
 - + low overall SW license cost?
 - - less liability for SW part
 - - chip vendors don't have required SW know-how
 - - tooling could be totally different for tier 1s, depending on used stack
 - - interoperability between different chip vendors is questionable
- Tier 1
 - - higher overall SW license cost?
 - + best optimization for application
 - + OEM driven
 - + OEM specific optim.
 - + Tier 1 specif. middleware
 - - OEM sees tier 1 specific variants
 - - more independency for Tier 1
 - - interoperability between different chip vendors is questionable
- OEM
 - Not core competency
 - No resources
 - No lever to reduce price

What the Tier 1 thinks

- Chip Vendors
 - - No OEM specific modifications
 - + Best technical optimization
 - + low overall SW license cost
 - - less liability for SW part
 - - chip vendors don't have required SW know-how
 - - tooling could be totally different for tier 1s, depending on used stack
- Tier 1
 - - high SW license cost?
 - + OEM driven
 - + OEM specific optim.
 - + Tier 1 specif. middleware
 - - OEM sees tier 1 specific variants
 - - more independency for Tier 1
- OEM
 - - Don't want use different solutions for different OEMs