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model identifies and describes the structure of data, flow of information, functions, constraints, and controls within the domain that are included in software systems in the domain. The domain model describes the commonalities and variabilities among requirements for software systems in the domain. (C/SE) 1517-1999

**domain of applicability** For a system element, the range, set, or set of ranges of intrinsic dates that can be represented, stored, manipulated, and processed invariantly within the system element. (C/PA) 2000.1-1999

**dominant mode (waveguide)** In a uniform waveguide, the propagating mode with the lowest cutoff frequency. (MTT) 146-1980w

**dominant mode of propagation** The mode of propagation with the lowest cutoff frequency. For a planar transmission line containing at least two disjoint conductors, the cutoff frequency can be zero. In this limit, the dominant mode reduces to a static electromagnetic field pattern and is also called the fundamental mode. For a planar transmission line with more than two conductors, there is more than one fundamental mode. (MTT) 1004-1987w

**dominant wave (uniconductor waveguide)** The guided wave having the lowest cutoff frequency. *Note:* It is the only wave that will carry energy when the excitation frequency is between the lowest cutoff frequency and the next higher cutoff frequency. *See also:* guided wave; waveguide.

**dominant wavelength (1) (television) (colored light, not purple)** The wavelength of the spectrum light that, when combined in suitable proportions with the specified achromatic light, yields a match with the light considered. *Note:* When the dominant wavelength cannot be given (this applies to purples), its place is taken by the complementary wavelength. (BT/AV) 201-1979w

(2) (of a light) The wavelength of radiant energy of a single frequency that, when combined in suitable proportion with the radiant energy of a reference standard, matches the color of light. (EEC/IE) [126]

**done.correct** A status code that is returned when a transaction is completed without errors. On many buses, the done.correct status is implicitly assumed when no error-status codes are observed. (C/MM) 1212-1991s

**Donnan potential (electrobiology)** The potential difference across an inert semipermeable membrane separating mixtures of ions, attributed to differential diffusion. *See also:* electrobiology. (EMB) [47]

**donor** *See:* semiconductor.

**don't care value (1)** The enumeration literal '-' of the type STD\_ULONGIC defined by IEEE Std 1164-1993. (C/DA) 1076.3-1997

(2) The enumeration literal '-' of the type STD\_ULONGIC (or subtype STD\_LOGIC) defined by IEEE Std 1164-1993. (C/DA) 1076.6-1999

**do-nothing instruction** *See:* dummy instruction.

**do-nothing operation** *See:* no-operation.

**door (gate closer)** A device that closes a manually opened hoistway door, a car door, or gate by means of a spring or by gravity. *See also:* hoistway. (EEC/PE) [119]

**door contact (burglar-alarm system)** An electric contacting device attached to a door frame and operated by opening or closing the door. *See also:* protective signaling. (PE/EEC) [119]

**door power operator** A device, or assembly of devices, that opens a hoistway door and/or a car door or gate by power other than by hand, gravity, springs, or the movement of the car; and that closes them by power other than by hand, gravity, or the movement of the car. *See also:* hoistway. (EEC/PE) [119]

**doors closed** A state, as given by trainline signal indication, in which doors are fully closed and locked. (VT) 1475-1999

**doors locked** The condition reached in the door-closing cycle when the drive has achieved a latching condition that will

hold doors closed mechanically until a door-opening cycle is initiated. (VT) 1475-1999

**doors open** A state, as given by trainline signal indication, in which doors are not fully closed and locked. (VT) 1475-1999

**dopant (1) (semiconductor) (acceptor)** An impurity that may induce hole conduction. *Synonym:* impurity. *See also:* semiconductor device.

(2) (donor) (semiconductor) An impurity that may induce electron conduction. *See also:* semiconductor device; impurity. (IA) [12]

**doped junction (semiconductor)** A junction produced by the addition of an impurity to the melt during crystal growth. *See also:* semiconductor. (ED) 216-1960w

**Dopen-loop phase angle** *See:* loop phase angle.

**Dopen-shut control system** *See:* on-off control system.

**doping (semiconductor)** Addition of impurities to a semiconductor or production of a deviation from stoichiometric composition, to achieve a desired characteristic. *See also:* semiconductor. (ED) 216-1960w

**doping compensation (semiconductor)** Addition of donor impurities to a p-type semiconductor or of acceptor impurities to an n-type semiconductor. *See also:* semiconductor. (IA) [12]

**Doppler beam sharpening (DBS)** A form of squint-mode synthetic-aperture radar (SAR) employed in a sector-scanning air-to-ground radar. *Note:* It usually has less resolution than a conventional SAR, since it employs a shorter processing (integration) time and varies this time as a function of beam squint angle so as to keep the resolution constant. Often displayed in near-real time on a plan-position indicator (PPI). (AES) 686-1997

**Doppler effect (1) (data transmission)** The phenomenon changing the observed frequency of a wave in a transmission system caused by a time rate of change in the effective length of the path of travel between the source and the point of observation. (PE) 599-1985w

(2) For an observer, the apparent change in frequency of a wave when there is relative motion between the source and the observer. (AP/PROP) 211-1997

**Doppler filter** A filter used in continuous wave (CW) radar, moving-target indication (MTI), or pulsed-Doppler radars for the purpose of separating moving target echo signals from stationary clutter echo signals. Also may be used to separate one moving target from another moving target due to a different Doppler frequency shift. (AES) 686-1997

**Doppler-inertial navigation equipment (navigation aid terms)** Hybrid navigation equipment which employs both Doppler navigation radar and inertial sensors. (AES/GCS) 172-1983w

**Doppler frequency (radio-wave propagation)** Of a wave traveling between a source and a point, the shift in frequency of the wave caused by the change of phase path with time. *Note:* The change may be due to variations in the separation of source and the point or in the refractive index of the intervening medium. (AP) 211-1977s

**Doppler navigator (navigation aid terms)** A self-contained dead reckoning navigation aid transmitting two or more beams of electromagnetic or acoustic energy outward and downward from the vehicle and utilizing the Doppler effect of the reflected energy, a reference direction, and the relationship of the beams to the vehicle to determine speed and direction of motion over the reflecting surface. (AES/GCS) 172-1983w

**Doppler radar** A radar that utilizes the Doppler effect to determine the radial component of relative radar-target velocity or to select targets having particular radial velocities. (AES/GCS) 172-1983w, 686-1997

**Doppler shift** The magnitude of the change in the observed frequency of a wave due to the Doppler effect. The unit is the hertz. (SP) [32]

**transient thermal rating** The transient thermal rating is that final current ( $I_f$ ) that yields the maximum allowable conductor temperature ( $T_{max}$ ) in a specified time after a step change in electrical current from some initial current,  $I_i$ .

(T&D/PE) 738-1993

**transient voltage capability (thyristor)** Rated nonrepetitive peak reverse voltage. The maximum instantaneous value of any nonrepetitive transient reverse voltage that may occur across a thyristor without damage. (IA/IPC) 428-1981w

**transient voltage surge suppressor (TVSS)** A device that functions as a surge protective device (SPD) or surge suppressor. (IA/PSE) 1100-1999

**transimpedance** (of a magnetic amplifier) The ratio of differential output voltage to differential control current.

(MAG) 107-1964w

**transinformation** (of an output symbol about an input symbol) The difference between the information content of the input symbol and the conditional information content of the input symbol given the output symbol. *Notes:* 1. If  $x_i$  is an input symbol and  $y_j$  is an output symbol, the transinformation is equal to

$$[-\log p(x_i)] - [-\log p(x_i|y_j)]$$

$$= \log \frac{p(x_i|y_j)}{p(x_i)} = \log \frac{p(x_i, y_j)}{p(x_i)p(y_j)}$$

where  $p(x_i|y_j)$  is the conditional probability that  $x_i$  was transmitted when  $y_j$  is received, and  $p(x_i, y_j)$  is the joint probability of  $x_i$  and  $y_j$ . 2. This quantity has been called transferred information, transmitted information, and mutual information. *See also:* information theory. (IT) [123]

**transistor** (1) An active semiconductor device with three or more terminals. It is an analog device. (ED) 216-1960w

(2) A semiconducting device for controlling the flow of current between two terminals, the emitter and the collector, by means of variations in the current flow between a third terminal, the base, and one of the other two. *See also:* logic gate. (C) 610.10-1994w

**transistor, conductivity-modulation** *See:* conductivity-modulation transistor.

**transistor equivalent** (A) A model approximating the behavior of an electronic component using only transistors, resistors, capacitors and inductors. (B) An approximation of the size of an integrated circuit, counting all circuit elements as transistors or portions thereof. (C) 610.10-1994

**transistor, filamentary** *See:* filamentary transistor.

**transistor, junction** *See:* junction transistor.

**transistor, point-contact** *See:* point-contact transistor.

**transistor, point-junction** *See:* point-junction transistor.

**transistor reset preamplifier** An integrating preamplifier in which the charge that accumulates on the feedback capacitor is drained off through a transistor when the charge exceeds a predetermined value. (NPS) 325-1996

**transistor-transistor logic (TTL)** A family of bipolar integrated circuit logic in which the multiple inputs on gates are provided by multiple transistors. (C) 610.10-1994w

**transistor, unipolar** *See:* unipolar transistor.

**transit** (1) (navigation aids) A radio navigation system using low orbit satellites to provide world-wide coverage, with transmissions from the satellites at vhf (very high frequency) and uhf (ultra high frequency), in which fixes are determined from measurements of the Doppler shift of the continuous wave signal received from the moving satellite.

(AES/GCS) 172-1983w

(2) An instrument primarily used during construction of a line to survey the route, to set hubs and point on tangent (POT) locations, to plumb structures, to determine downstrain angles for locations of anchors at the pull and tension sites, and to sag conductors. *Synonyms:* site marker; level; scope.

(T&D/PE) 524-1992r

**transit angle** The product of angular frequency and the time taken for an electron to traverse a given path. *See also:* electron emission. (ED) 161-1971w, [45]

**transition** (1) (A) (data transmission) (signal transmission) The change from one circuit condition to the other, that is, to change from mark to space or from space to mark. (B) (data transmission) (waveform) (pulse techniques) A change of the instantaneous amplitude from one amplitude to another amplitude level. (C) (data transmission) (transition frequency) (disk recording system) (crossover frequency) (turnover frequency) The frequency corresponding to the point of intersection of the asymptotes to the constant-amplitude and the constant-velocity portions of its frequency response curve. This curve is plotted with output voltage ratio in decibels as the ordinate and the logarithm of the frequency as the abscissa. (PE) 599-1985

(2) (A) (pulse) A portion of a wave or pulse between a first nominal state and a second nominal state. Throughout the remainder of this document the term transition is included in the term pulse and wave. (B) (pulse) The region of a pulse in which a major change in amplitude occurs, such as the leading edge (first transition) or final trailing edge (last transition). (NPS) 300-1988

(3) A joint that connects two cable types. A joint on extruded cable rated 46–138 kV connecting an ethylene propylene rubber (EPR) insulated cable to a crosslinked polyethylene (XLPE) or high-molecular-weight polyethylene (HMWPE) insulated cable should be considered a transition joint.

(PE/IC) 404-1993

(4) (of a pulse) The region of a pulse in which a major change in amplitude occurs, such as at the leading edge (first transition) or final trailing edge (last transition).

(NPS) 325-1996

(5) The change of a logic signal from one state to another (as in “. . . a transition at the input shall cause. . .”) or the pair of logic states between which a transition may occur (as in “. . . the delay for a low-to- high transition. . .”).

(C/DA) 1481-1999

(6) *See also:* software transition. (C/SE) J-STD-016-1995

**transitional mode** The change from the nonoperating to the operating mode, caused by switching the input to the relay from the nonoperating to the operating input, or vice versa.

(SWG/PE/PSR) C37.100-1992, C37.98-1977s

**transition compartment** The compartment specifically designed for joining gas-insulated substation equipment of different design or manufacture. This compartment provides the necessary transition for the current-carrying conductor and the gas enclosure.

(SWG/PE/SUB) C37.100-1992, C37.122.1-1993, C37.122-1993

**transition contacts** For resistance-type LTCs, a set of contacts that is connected in series with a transition impedance and makes and breaks current. (PE/TR) C57.131-1995

**transition current** The current required at a given temperature and duration to cause a current-protective device to change state. (SPD/PE) C62.36-1994

**transition density** The number of times the stream of bits within an 8B/10B code-group changes its value.

(C/LM) 802.3-1998

**transition duration** (1) (pulse terminology) The duration between the proximal point and the distal point on a transition waveform. (IM/WM&A) 194-1977w

(2) (of a step response) The duration between the proximal point (10%) and the distal point (90%) on the recorded output response transition, for an ideal input step with designated baseline and topline. (IM/WM&A) 1057-1994w

**transition frequency (disk recording)** The frequency corresponding to the point of intersection of the asymptotes to the constant-amplitude and the constant-velocity portions of its frequency response curve. This curve is plotted with output voltage ratio in decibels as the ordinate and the logarithm of the frequency as the abscissa. *Synonyms:* turnover frequency;